THE TIMES
Higher Education
SUPPLEMENT

V-c's back pay is illegal, professor alleges

by Sue Reid

A decision to pay Sir Cyril Philips, vice-chancellor of London University, more than £6,000 in back pay has met with bitter criticism from one of the university's professors. Professor John Griffith has sent a strongly worded complaint to the Privy Council over the payment which, he claims, is illegal.

Professor Griffith says the decision, made by London University senate in July, is contrary to the present pay policy of the Government. He also alleges that the senate had no power to make the ruling.

Sir Cyril, director of the university's School of Oriental and African Studies, was appointed part-time vice-chancellor in 1972. He became full-time vice-chancellor in 1974 but in August this year reverted to part-time vice-chancellor after the Privy Council rejected new statute proposals put forward by the university to make the vice-chancellorship a full-time administrative and salaried post.

Sir Cyril has been paid as director of his school since 1972 but at the July meeting of the senate it was agreed that for the period between January 1974 and July 1975 he should be awarded, as additional back pay, honoraria at the rate of over £4,000 a year. It was also ruled that from August, for the session 1975-76, he should be awarded an honorarium of £4,668.

Now Professor Griffith claims that the decision was "wholly unjustifiable". In the statement to the Privy Council he says: "Even if an honorarium were justified for the period during which Sir Cyril was full-time vice-chancellor, there can be no justification for paying his the greater sum of £4,668 a year now he has reverted to a part-time appointment."

He adds that it was ill-judged and foolish at a time of financial stringency to make a back payment of over £6,000 to Sir Cyril, when previously the office of vice-chancellor had been regarded as an honour.

Professor Griffith, one of the sternest critics of the Murray report proposals which suggest the change in role of the university's vice-chancellor, has told the Privy Council that the honoraria are "part and parcel" of the implementation of the recommendations of the report.

He adds: "On a proper interpretation of the University of London Act 1926 and the statutes made thereunder the vice-chancellorship is an unpaid appointment and the payment of these honoraria is illegal and *ultra vires* the court and senate."

Dr Ronald Tress, master of Birkbeck College and chairman of the university's joint finance and general purposes committee, said this week that the new arrangement to pay vice-chancellors was a permanent move.

The university, he said, had sought legal advice before making the decision. There was nothing in its statutes to say that the vice-chancellor should not be paid and the university was confident that there had been no impropriety regarding the Privy Council's rejection of the proposed statutes earlier this year.

In Parliament

More than 28,000 arts students graduated from British universities in the academic year 1973-74 compared with 27,247 science students, the House of Commons has been told.

In a written answer to the House Mr Fred Mulley, Secretary of State for Education and Science, gave figures comparing the number of first degree graduates in arts and science during the five years between 1969 and 1974. These showed that in 1969 there were marginally more science than arts graduates but by 1972 this trend had been reversed.

Of the 54,387 graduates in that year 27,485 were arts graduates and 26,902 science graduates. By 1974 the gap had widened with nearly 1,000 more arts students graduating from universities than science students.

* * *

Mr Mulley, also in a written answer, told the House that in the financial year 1974-75 £381m was spent by local education authorities in England and Wales on teachers' salaries within the advanced and non-advanced further education sector.

Mr Mulley outlined the salary scales of university teaching staff since 1970. These showed that in 1970 a university lecturer was earning between £1,491 and £3,417 a year, a senior lecturer up to £4,401 a year, and a professor about £5,610 a year.

By 1974 it was estimated that the notional salary of a lecturer was between £1,846 and £4,021, the salary of a senior lecturer between £3,880 and £4,882, while the average notional earnings of a professor were about £5,905.

* * *

In a written answer Mr Mulley told the House that in 1974 the ratio of full-time students to each full-time member of staff in British universities was eight to one. In the polytechnics in England and Wales the ratio of students to full-time teaching staff during the same year was about seven to one, while in colleges of education the ratio of students to staff was about 10 to one.

* * *

During 1974 the institutional unit cost of each polytechnic student was £1,130, Mr Mulley announced in the House recently. The comparative cost of a university student was £1,490 and a college of education student just £655, he said.

* * *

Mr Mulley also gave figures to indicate the increase in demand for veterinary school places over the past five years. These showed that in the academic year 1969-70 888 candidates playing to British universities had named veterinary science as their first choice subject. By 1973, 1,155 candidates listed it as their first choice and last year it was estimated the figure had risen to 1,336.

The number of first-year undergraduates studying veterinary science at university also grew in the same period. Mr Mulley gave figures to show that in 1970 there were about 250 first-year veterinary science undergraduates compared with about 340 last year.

* * *

The House was also told that the Department of Education and Science had allocated £310,000 for university research on social work projects for the next academic year. A further sum of about £26,000 was reserved, but as yet uncommitted, for new research work in the same field during 1976-77.

Low recruitment to technical courses 'threatens industry'

from page one

and the students often follow a common first year with electrical and mechanical engineering, the figures are likely to be lower than actual recruitment. Even so, Lanchester Polytechnic had only eight students on the second year of the course this year.

Other poor areas included food technology, metallurgy, foundry technology, printing, textiles, physics, chemistry and aeronautical engineering.

The North East Wales Institute of Higher Education, which runs the sole aeronautical engineering course, has attracted 12, 9 and 16 students over the past three years.

Almost two-thirds of 64 students recruited to food technology diplomas were admitted to two courses at South Bank Polytechnic and Grimsby College of Technology. The remaining 22 students were distributed among three courses at Bristol Polytechnic (11); Grimsby College of Technology (7); and Cardiff College of Food Technology (4).

The 49 students recruited to metallurgy were divided between four courses. Twenty-four students were recruited to Sheffield Polytechnic, 11 to Manchester Polytechnic, nine to West Bromwich College of Commerce and Technology, and five to the North-East Wales Institute of Higher Education.

Similarly, the 41 students recruited to foundry technology were divided between three courses: 19 at Chesterfield College of Technology, 12 at Bolton Institute of Technology and 10 at West Bromwich College of Commerce and Technology.

A total of 29 students were recruited to three printing courses; 14 to Watford College of Technology, 10 to Trent Polytechnic and five to the London College of Printing.

Textiles recruited 69 students to five courses, with 22 students at Leicester Polytechnic; 18 at Huddersfield Polytechnic; and 13 each at Blackburn College of Technology and Bolton Institute of Technology. Kidderminster College of Further Education recruited three students. Higher National Diplomas in textiles are being phased out, however, in advance of the general replacement of HNDs by new courses.

Middlesex Polytechnic was the only institutions to run a physics course which had at least 20 students. Recruitment to other physics courses was: Sheffield (18); Preston Polytechnic (16); Portsmouth Polytechnic (10); the Polytechnics of North Staffordshire (nine); Lanchester seven); and Kingston (five).

Newcastle Polytechnic, with 17 students, was the largest recruiter to a chemistry HND, with Sheffield and Leicester Polytechnics attracting 16 each. The lowest recruitment to chemistry was at NELP (six). Manchester Polytechnic and North East Wales Institute of Higher Educated attracted seven each.

Among the top recruiters to business studies last year were West London College (179); Newcastle Polytechnic (144); South West London College (118); and Bristol Polytechnic (116).

Among the top recruiters in hotel and catering were Westminster College (65) and Hollings College with Elizabeth Gaskell College of Education, Manchester (61) and Bournemouth College of Technology (70).

Courses that failed to attract students

	1973	1974	1975
Civil engineering			
Mid-Essex Tech Col	nil	nil	nil
Wigan and District Mining and Tech Col	closed		
Teesside Poly	11	nil	[illegible]
Trent Poly/Derby Col of Art and Technology	10	nil	33
Chemical engineering			
Birkenhead Col of Technology*	nil	nil	nil
Huddersfield Poly	nil	nil	11
Electrical engineering			
Watford Col of Technology	nil	closed	[illegible]
Norwich City Col	13	nil	
St Helens Col of Technology	closed		
Farnborough Col of Technology	nil	closed	
Mechanical engineering			
Watford Col of Technology	closed		closed
North East Essex Technical Col	15	nil	nil
Chesterfield Col of Technology	9	nil	nil
Teesside Poly	nil	nil	nil
North-East Wales Inst of HE	7	nil	
Physics			
North East London Poly	5	nil	nil
Mid-Essex Technical Poly	nil	nil	nil
Metallurgy			
Teesside Poly	nil	nil	nil
Chemistry			
Wolverhampton Poly	nil	nil	nil
Teesside Poly	nil	nil	15
West Cheshire Col of FE	closed		
Mathematics, statistics and computing			
Letchworth Col of Technology	7	nil	closed
Liverpool Poly	7	nil	nil
North Gloucestershire Col of Technology	15	nil	[illegible]
North Staffs Poly	nil	nil	
Computer studies			
Mid-Essex Technical Col	6	nil	nil
Business studies			
North East Essex Technical Col	23	nil	nil
Institutional management			
Birmingham Col of Food	14	nil	
Business studies and languages			
South Bank Poly	16	nil	21

*Course still running as students regularly transfer to second year.

Self-validation will destroy relations, Sir Michael warns

by Frances Gibb

If polytechnics validated their own courses their valuable relationship with the Council for National Academic Awards would be destroyed, Sir Michael Clapham, chairman of the CNAA, told graduands at Ulster College, Northern Ireland Polytechnic, this week.

Many members of polytechnics looked forward to the day when they could receive the mark of academic maturity and have a royal charter to validate their own degrees, he said. But others, noting the changing nature of the council's work, were forming a different concept of academic maturity.

Directors and staff of polytechnics and colleges were playing an increasing part in the CNAA's work, which was mainly done by "an army of unpaid volunteers, over a thousand strong; some drawn from industry and the professions, but half now from the polytechnics and colleges themselves.

"In consequence, the council and the colleges are moving into a partnership which could become too valuable to be dissolved; a partnership for mutual aid of the teaching institutions for pooling information about experiments, maintaining standards while stimulating innovation."

He commended the vocational emphasis of the polytechnics; their great strength was that the acquisition of knowledge was never far removed from its practical application. The sandwich course, which enabled students to test the relevance of their studies against the world's activities, was one of their most distinctive features.

Universities opt for in-filling

Universities are spending the bulk of the recently announced £8m Government buildings grant on minor in-filling projects costing less than £200,000 on average.

The University Grants Committee's priorities are modernization and refurbishing departments to reach the required fire and safety standards, but most universities have pressed for money for such projects as a £50,000 telephone exchange at Newcastle University and £300,000 towards the cost of housing Oxford University's ICL 2980 computer.

Mr Mulley, Secretary for Education, announced in August that the Government was allocating £28m for higher education building. The polytechnics and further education colleges took the lion's share of this sum with £20m worth of building starts in 1976-77.

Because the universities' sum is relatively small there are few major capital projects being planned for next year. Leeds University, however, plans to build a completely new social sciences block which will provide teaching space for 800 students. The UGC will give £675,000 towards the cost.

At Manchester University the UGC is contributing towards the cost of 280 new student self-catering places in the development at Fallowfield. The bulk of the money for these will be raised by loan.

Some universities, like Birmingham, have been told by the UGC that no money at all is forthcoming next year for new building.

Correction

In last week's issue of *The THES* it was incorrectly stated that Bradford University charged its overseas students higher hostel fees than its home students. In fact, Bradford makes no distinction between its students in hostel fees.

UEA plans law school

The University of East Anglia has announced an approach to the University Grants Committee for aid in establishing a law school, with a first intake of 50 undergraduates by 1977.

Bristol poly's library opened

Bristol Polytechnic's Bolland Library, named in memory of the late Dr Robert Bolland, the first director of the polytechnic, was officially opened last week.

The library, covering management, law and social sciences, holds 86,000 volumes with an expansion capacity of 130,000 volumes. It can house 350 students and contains a wide range of modern audio-visual equipment.

NEXT WEEK

Profile of Dr R. B. Hunter
Geography at Cambridge
Interview with Roy Shaw
Don's Diary by Laurie Taylor
John Rees on J. S. Mill and psychohistory
Electronic calculators supplement

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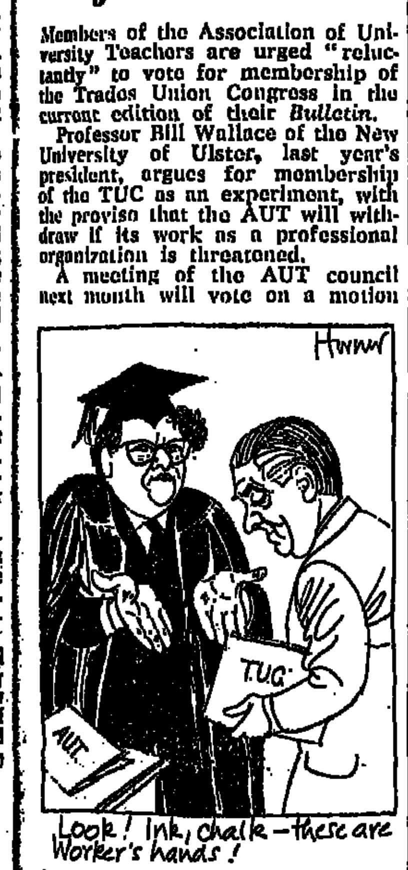
'Reluctant' AUT seeks to join TUC

Members of the Association of University Teachers are urged "reluctantly" to vote for membership of the Trades Union Congress in the current edition of their *Bulletin*.

Professor Bill Wallace of the New University of Ulster, last year's president, argues for membership of the TUC as an experiment, with the proviso that the AUT will withdraw if its work as a professional organization is threatened.

A meeting of the AUT council next month will vote on a motion



from its executive that the membership should answer by ballot the question whether the AUT should join the TUC. It is likely that a ballot will be held in February.

Professor Wallace says: "On balance it would seem fair to conclude that membership of the TUC would not necessarily lead to a lessening of the AUT's interest in the general university field.

"It could be argued that the AUT should join and add its weight to that of other non-political organizations in steering the TUC towards non-party politics."

He adds that with the strength of the TUC behind its salary claim the AUT might have been able to settle its salary negotiations quicker and more to its advantage.

● During 1974-75 the membership of the AUT increased by about 10 per cent, adding 2,500 additional members.

NUS to fight for 33 per cent more

The National Union of Students is to demand a 33 per cent increase in the student grant, Mr Alistair Stewart, deputy president of the NUS and convenor of the national grants campaign, said at the weekend.

Speaking at the NUS Wales conference, Mr Stewart said the NUS is planning to campaign for an increase from £740 to £985.

Government gives extra £1m for building

The Government has given the universities an extra £250,000 for buildings as part of its policy of providing jobs for the construction industry.

Education going down

The post of Secretary of State for Education and Science was ranked 21st in the Government list published in *The Times* on November 24. On October 14, 1969, in the second Wilson Government, it ranked 15th and in January 1973, during the Heath administration, it was 11th.

Justify social science to society new SSRC chairman urges

by David Walker, Social Sciences Correspondent

A warning to social scientists to avoid fratricidal disputes has been issued by the new chairman of the Social Science Research Council.

In the November issue of the council's *Newsletter*, Mr Derek Robinson, who took over as part-time chairman at the beginning of October, warns that the social scientists are not the most highly regarded occupational group in society—and he believes his experience as an economist qualifies him to say it.

"We have to find ways of reconciling whatever differences there are between us, at least to the point where we can present fully, articulately and convincingly, the strong case that we have and need to get across in the difficult times that are going to face us."

Mr Robinson, a Fellow of Magdalen College, Oxford, and senior research officer at the Oxford Institute of Economics and Statistics, emphasizes in his article "Looking forward from 1975" the need for social scientists to justify themselves and their work not only to other academics but to the general public as well.

"The necessity is to combine an inevitably greater degree of public accountability with protection of the standards and independence without which academic research ceases to exist as an independent and valuable contribution to democratic society."

Mr Robinson, who is said by SSRC staff to have struck a remarkable rapport with the council's new secretary, Dr Cyril Smith, hints that some of the procedures in research grant application might have to be changed.

He adds, however, that there is one element in the SSRC system which he hopes will never change. He praises the involvement of academics in judging their colleagues' work and applications, calling it the best defence against outside intervention and excessive bureaucracy.

"There are hundreds of academics involved in the advisory and decision-taking processes of SSRC. If there is less than total unanimity in their views this is no more than a reflection of the full academic population they represent. While there has to be some common central policy and agreed lines of development and priorities, this does not require total centralization or the imposition of monolithic uniformity."

SSRC *Newsletter*, November 1975.

Leader, page 16

Rate grant settlement threatens 10,000

by David Hencke

Up to 10,000 trainee teachers are likely to be unemployed when they finish their training next year following last week's settlement of the rate support grant at £6,852m.

The Association of Teachers in Technical Institutions fears redundancies of academic staff in at least five of the 30 polytechnics — Manchester, Newcastle, Lanchester, Portsmouth and South Bank. Manchester and Newcastle, because of college and polytechnic mergers, could each lose about 100 jobs.

At Portsmouth 64 academic and secretarial posts are expected to disappear following proposals to reduce the salaries bill by about £300,000 in a general expenditure reduction of nearly £1m.

The Government's decision to reduce the proportion of its contribution to the rates by 1 per cent, to introduce a cash limit of £480m to cover additional pay and price rises during the next financial year, and to impose a complete standstill on local government expenditure has angered the education unions, disappointed the local authorities and created a rift between Mr Crosland, Secretary of State for the Environment, and Mr Mulley, Secretary of State for Education.

At a press conference Mr Crosland admitted that relations between him and Mr Mulley had become "somewhat strained" because of the settlement. Mr Mulley has been pressing for a two per cent growth in the education budget, although his absence from talks between the Trades Union Council and the Government recently had led trade union leaders to suspect that he had lost the battle.

Town hall treasurers, who have been interpreting the Government's intentions this week, have been told that the "standstill" calculations are based on a 10-11 per cent inflation rate in the year from last September.

The grant, which accounts for 65.5 per cent of local authority spending, compared with 66.5 per cent last year, has been re-distributed to favour London at the expense of the county and metropolitan authorities. That inevitably is expected to lead either to higher levels of cuts or larger rate increases in the county authorities.

In addition some county authorities, mainly Conservative controlled, are said to favour reductions of up to 2 per cent in local authority expenditure in line with Conservative Party policy, among them Lincolnshire, Cumbria and Surrey.

There is also evidence that local authorities, which are entitled to spend their grant regardless of the money calculated to provide services, have not been spending the full share allowed for education.

The Association of Teachers in Technical Institutions, the National Union of Teachers and the National Union of Students have condemned the settlement and are planning to fight the cuts by holding regional rallies, such as those as Exeter, Bristol and Liverpool recently, by holding one day strikes and refusing to cooperate with local authorities contemplating cuts.

Among authorities considering reductions in further education are Leicestershire, Devon, Gloucestershire, Durham, Cleveland, East Sussex, Rochdale, Surrey, Hertfordshire, Bolton and Sunderland.

Proposals include the closure of GCE courses for 700 students in Gloucestershire; closure of adult education courses in Rochdale; removal of 50 further education jobs in Hertfordshire; and cuts in staff in further education colleges at Bolton, Sunderland, Durham and in Teesside.

Teacher training students are likely to find it very difficult to find jobs because of the Government's commitment to nil growth.

Indications from authorities seem to show that the only new jobs likely to be created are in sixth forms, with many authorities proposing to reduce the number of jobs in nursery and primary education.

National estimates prepared by the Government show that between 5,000 and 10,000 teachers can expect to be unemployed next year.

RATE SUPPORT GRANT KEY FACTS

(1) Total Accepted (Relevant) Expenditure

1975-76	1976-77
Nov '75 prices	Nov '75 prices
£9,910m	£10,461m

The "standstill" is in current expenditure, whereas the figures above include loan charges and capital met from revenue.

(2) Total Exchequer Grant

	1975-76	1976-77
	66.5%	65.5%
	Nov '75 prices	Nov '75 prices
	£6,590m	£6,852m
London's share of Needs and Resources	12.4%	(about) 14%

(3) The Cash Limit

The cash limit of £480m is a pre-determined limit on the amount of additional grant payable towards the cost of pay and price increases in 1976-77 not already allowed for in the settlement.

Scotland and Wales stay with UGC

Control of the Scottish and Welsh universities will not be given to the national assemblies, according to Government proposals revealed yesterday in its White Paper on devolution.

As predicted in the *THES*, the University Grants Committee is to remain intact, although it will probably set up a special sub-committee to deal with "the Scottish dimension" of university business on which representatives of the Scottish government will sit. The United Kingdom basis of the research councils will remain unchanged.

All further and higher education outside the universities will become the responsibility of the new Scottish and Welsh administrations, although control of student grants for advanced further education will be determined by Westminster.

The White Paper states: "Responsibility for the Scottish universities will not be devolved. The Government believe that it is in the best interests of the United Kingdom, including Scotland, that they should continue to be run as part of a wider United Kingdom system and under the supervision of a single University Grants Committee.

"At the same time, the Government attach importance to close and effective liaison between the Scottish universities and those other parts of the higher education system that will come under the control of the Scottish administration. The UGC will therefore be asked to devise arrangements recognizing the specific Scottish dimension of their business, and linking the Scottish administration with these arrangements."

The paragraphs of the White Paper dealing with Welsh higher education are shorter. "Responsibility will not be devolved for the research councils, or the Nature Conservancy Council; for the universities; for national policy on mandatory awards to students on higher education courses and for postgraduate awards."

Aston quits NUS

The Guild of Students at Aston University has turned its back on the National Union of Students.

At a general meeting of the guild (the students union) this week, an executive committee motion proposing that it remain affiliated to the NUS was overwhelmingly defeated by 893 votes to 332.

This is the first time since 1968 that a union has decided to disaffiliate from the NUS.

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Colleges await final decision on merger

by David Hencke

Lord Crowther-Hunt, Minister of State for Higher Education, is shortly to announce final decisions on the future of two West Midlands colleges of education following a "fact-finding" tour of the colleges last Friday.

The minister has decided to investigate whether the large Dudley College of Education should be merged with Wolverhampton Polytechnic or with Dudley College of Further Education.

The staff of both college and polytechnic would welcome a merger since it would provide a comprehensive faculty of education with the existing Wolverhampton Technical Teachers' College and Wolverhampton Day College in an enlarged polytechnic.

The Labour-controlled Dudley council wishes to retain the college so that another institute of further and higher education can be established.

The minister also visited the West Midlands College of Education, Walsall, which was one of the first colleges to offer Council for National Academic Awards degrees, and is now one of the last large colleges which has had no final decision about its future. It hopes to remain independent and to offer, like Chelmsford and Edge Hill colleges of education, courses outside teacher training.

● Liverpool Council's further education sub-committee has established a working party to investigate the effects on local schools and colleges of the C. F. Mott College of Higher Education transferring its validation from Liverpool to Lancaster universities.

The committee is understood to have no objection to the change but is concerned about how such changes will affect the future of other colleges which will remain with Liverpool University.

● At the Universities Council for the Education of Teachers annual conference at York University earlier this month consideration was given to the council's role following the reorganization of teacher training. Among its guests was Mr Hugh Harding, under-secretary at the Department of Education and Science.

● St Peter's College, Saltley, one of four Anglican colleges threatened with closure by the Church of England Board of Education, has submitted a four page appeal to the Department of Education and Science outlining its case for survival.

It is critical of the Board of Education for failing to meet the need for a "regional spread" of teacher training places in England and Wales.

It says that closing St. Peter's "would mean that members of the Established Church in the second city of the nation would be forever deprived of their right to train for the teaching profession in a college of their own denomination, a right retained (at Newman College) for Roman Catholics and members of the free churches (Westhill College)."

Thatcher prefers on the job training

British industry had more need of managers who could make firms pay than graduates of university business courses, Mrs Thatcher, leader of the Opposition told the annual meeting of the Business Graduates Association in London last week.

She said: "There are a hell of a lot of managers who are not professionally trained who have made a success of business. There is a shortage of people who can start up a business and make it pay and employ other people. Good management is not made by possession of a university degree."

Mrs Thatcher was the principal guest of the association, which represents former students of organizations like the London and Manchester Business Schools and other postgraduate courses.

Deriding the idea that Britain was class dominated, Mrs Thatcher said the educational system should be organized on the basis of ability. The grammar schools should be retained to ensure that universities continued to take their students from all sorts of social backgrounds.

Charter on admission for handicapped sought

Picture by Barry Lewis

Member of a party of handicapped Open University students on a visit to Rome earlier this year.

by Jane Feinmann

Every British institution of higher and further education is to be asked to formulate and publish a policy on the admission of and provision for handicapped students. The aim is to stop handicapped students being prevented from taking courses for which they are qualified.

The request will be made by the National Bureau for Handicapped Students, which passed a resolution to this effect at its first annual general meeting, held in London last week. The NBHS was formed a year ago under the guidance of Mr Denis Coe, their present chairman and a member of the Warnock Committee, to assist handicapped students in tertiary education.

It hopes to help integrate handicapped people into normal society instead of isolating them in beautiful houses in the country.

The NBHS is aware that its first step in this direction is a cautious one and it also realizes that it has no direct influence over the institutions involved.

"We do appreciate that it might be beyond the power of a single institution, however well intentioned, to ensure that any handicapped student could follow any course of studies", Mr Colin Low, a lecturer at Leeds University and a member of the NBHS steering committee, said last week.

Bradford University, during a preliminary survey, had already expressed doubts as to the feasibility of this aim.

"What we hope is that qualified handicapped students will be able to find a place somewhere in tertiary education for every possible course of study. This will require considerable organization but it is possible that NBHS could act as a clearing house, once the individual institutions have published policies."

Mr Low paid tribute to his own university which had made huge strides in effecting integration of handicapped students since Lord Boyle, the vice-chancellor, had pledged that there would be no unjustifiable prejudice against handicapped students.

The problems facing handicapped students are primarily those of access, but the NBHS emphasizes that the attitude of the authorities and the "total environment" are equally important. Mr Michael Oliver, a postgraduate student at Kent University who is severely handicapped and permanently in a wheelchair, believes the lot of the handicapped student would be eased if a member of staff were designated as a mediator between students and administration.

About a year ago, for instance, the bookshop in the Kent University library was moved from the basement to the mezzanine floor, which was inaccessible to wheelchairs, a result of ignorance on the part of the authorities but it took Mr Oliver the best part of a year to contact the various committees and have the move reversed.

Students 'lost £1m' on pop concerts

Plans for a secret ballot for the election of the national executive, similar to the National Union of Mineworkers' "pithead ballots", and a scheme to stop an estimated £1m loss on pop groups at students' unions over the past two years, will be the main issues at the National Union of Students' winter conference next month.

More predictable debates will be held on plans for another campaign on education cuts and grants and the Government's economic policies and housing, including a new campaign against the proposed criminal trespass law which will make squatting more difficult.

The proposals for electoral reform look likely to be the most fraught issue, since no fewer than 22 amendments have been put forward against the motion, including one headed by the NUS executive.

The reform proposals are supported by 10 universities and university colleges, including the Cambridge, Manchester and Birmingham universities students' unions. They are supported by two polytechnics, two art colleges, three colleges of education, two colleges of further education, a college of technology and an agriculture college.

The proposers say that the majority of students feel alienated from the union and cannot participate in electing the executive since the executive is elected solely by delegates to the Easter conference.

The main opposition to the proposals is in an amendment by the NUS executive with the support of nine universities, including Oxford and Sussex, two polytechnics and two colleges of further education.

The amendment says that the NUS is already one of the most democratic organizations of its kind and that elections would reduce the accountability of its executive to nothing.

It adds that national elections by a secret ballot would be undesirable, expensive and impracticable and would help candidates who could muster massive publicity resources and "curry favour with the national media". Reforms would "replace real democracy with formal, passive democracy and foster bureaucracy and careerism in union affairs".

The amendment agrees to the establishment of a constitutional review committee and to improvements in informing members. It condemns the proposers of reform for discrediting the union and calls for a "psychiatrist to examine the movers of the motion".

The hiring of pop groups, and subsidies which are believed to have totalled £1m to pay for the groups, are condemned in a report on entertainments. This shows that union subsidies for groups has led to higher group prices and higher agency profits rather than lower ticket prices for students.

The report calls for a new entertainments department to be set up at NUS headquarters so it can advise social secretaries on band prices, tour arrangements and budgetary control.

"For less than £11,000 we can start to redirect over £500,000 into the overall work of the student movement", it says.

Minister attacked for 'leaving quality out of his catechism'

by Alan Cane

Dr Trevor Thomas, vice-chancellor of Liverpool University, this week made an outspoken attack on the attitude to higher education displayed by Lord Crowther-Hunt, Minister of State for Education.

Dr Thomas reminded Liverpool's university court in his annual report that Lord Crowther-Hunt had questioned student numbers targets, staff-student ratios, numbers of overseas students and volume of research.

Dr Thomas said: "I think it is a matter for regret and concern that the word quality seems to have been so conspicuously absent from the recital of this catechism. The language is that of the manpower planner and of the cost-benefit analyst. The plans are those of the organization and methods unit and the yardstick is that of relevance."

Dr Thomas asked: "Is it really being suggested that some of our great scientific departments, built up with care and dedication by successive generations of scholars, are to be invited to chop off the last 20 research students they would have otherwise admitted so that 40 undergraduates of no designated discipline can be admitted?"

He went on to attack the idea that university studies could be labelled relevant or irrelevant, arguing: "Let me deny, even if I do it alone, that the primary task of a university is to produce trained personnel who will fit neatly and conveniently into some planned scheme of things.

"Their urgent and important task is to train young men and women to be adaptable and to be able to make use of their intellectual powers in whole succession of varied and challenging tasks which will confront them throughout their lives."

The Liverpool report shows that the university has about £33,000 of uncommitted recurrent grant left for the remainder of the quinquennium and about £108,000 in reserve to meet non-recurrent expenditure over the next two years.

The university remains committed to a substantial emphasis on science and Dr Thomas writes: "It is a matter for regret that, at the moment, young people coming to us from the schools seem disinclined to embark on a scientific training, but we believe it would be foolish to overreact to what may be a passing phenomenon."

SRC gives Cambridge £1.3m

Cambridge University received research support funds from external sources totalling £1,327,707 in the year 1973-74, according to the latest issue of the Cambridge University Reporter.

The largest contribution was from the Science Research Council (£1,315,390) followed by the Medical Research Council (£354,153), the Natural Environment Research Council (£167,000), the Social Science Research Council (£132,395) and the Ministry of Defence (£147,695).

The areas in which support increased most markedly were pharmacology (from £24,352 to £68,623), South African studies (£13,902 to £30,599) and zoology (£116,451 to £212,729).

The overall figure represents an increase of about £600,000 over the previous year (1972-73).

Controversial South Bank report will not be published

The council of governors at the Polytechnic of the South Bank voted last week not to publish the controversial report of the £40,000 inquiry held earlier this year into the running of its business studies department.

Dr J. Simmons, chairman of the London joint committee of the Association of Polytechnic Teachers which has been pressing for the report's release, commented: "We are very upset. We have heard no convincing argument as to why it has not been published."

He said the APT was thinking of ways to persuade the governors to "see reason."

The report of the tribunal, set up to investigate allegations by 30 lecturers backed by the Association of Teachers in Technical Institutions against Mrs Lillian Geach, then course director of the business studies degree, and against Mr A. J. Bellamy, deputy director, dismisses all but one of the allegations.

Lecturers were complaining that conditions of responsibility had been allocated unfairly, that departmental administration was unsatisfactory and that lecturers had been verbally abused by Mrs Geach. The latter grievance was partially upheld.

Mrs Geach said this week: "I find the whole thing very frightening. It is absolutely incredible that in this day and age a report exonerating an individual cannot be published."

Mr V. Pereira-Mendoza, director of the polytechnic, said that the council had come to its decision after considering representations from Mrs Geach and the APT.

He pointed out that the findings of the tribunal were widely published last April.

News in brief

£150,000 for plant classification

Ecologists from four universities have received a £150,000 grant from the Nature Conservancy Council to produce a comprehensive classification of plants in Britain.

Under the chairmanship of Professor C. D. Pigott, head of the department of biological sciences at Lancaster, the five-year project will be based on the Universities of Lancaster, Cambridge, Exeter and Manchester. It will result in the publication of a dictionary of vegetation.

New Birmingham M.Litt

Birmingham University senate has approved a new degree of Master of Letters in the faculty of arts. It is intended to fill an intermediate position between the MA and the PhD.

A student must complete two full academic years or approved part-time periods of study and write a thesis of not less than 80,000 words before gaining the MLitt.

English lessons required

Almost 45 per cent of overseas students starting courses at Birmingham University this term do not have an adequate command of the English language. After English tests administered to both undergraduate and postgraduate students, it was discovered that 140 students needed to attend English classes.

£771,670 for research

The University of East Anglia received £771,670 in research grants for 1974-75. Of that chemical sciences took £95,464 and environmental sciences £251,512.

The Centre of East Anglian Studies received £69,724 and the Centre for Applied Research in Education £55,228.

The library show

Newcastle Polytechnic's library has launched a three-year project to investigate how the collection and use of information is taught. The project, which is funded with a grant of nearly £90,000 from the British Library's research and development department, will take the form of a travelling workshop.

It will visit some eight universities and polytechnics to provide short courses on topics such as information sources and retrieval. Assessment of the project will be supervised by the Association of Special Libraries and Information Bureaux.

Teacher training drop

Teacher training applications have dropped again this year by a further 26 per cent because of growing unemployment problems facing teachers.

Figures from the clearing house for teachers show that applications are now running at the lowest level for four years.

Last week there were 2,251 applications from men and 12,167 from women. This compared with 2,855 and 16,013 respectively last year.

Researchers may have to pay to use computers

by Alan Cane

University researchers who use computers provided by the Computer Board will have to pay in future. This is almost certain to be agreed at a symposium starting today in Buxton.

Among those attending will be Sir Frederick Dainton, chairman of the University Grants Committee, Sir Arthur Armitage, chairman of the Committee of Vice-Chancellors and Principals, and Sir Sam Edwards, chairman of the Science Research Council.

The future of the Computer Board, which has responsibility for providing computing facilities in British universities, is on the agenda and some fear that proposals which suggest merging the board with the UGC or alternatively, disbanding it and placing responsibility for British university computing in the hands of the SRC, will gain ground.

A spokesman for the Computer Board said this week that no firm decision would be taken at the seminar. The issue would be studied and proposals put to the board at its meeting next January. He expected firm decisions to emerge by March.

It seems clear that charging for computer services will be introduced in order to find out how much money should be provided for computer services in comparison with all other university facilities.

The board is believed to have accepted a scheme involving:

● all research computing to be charged at 10 per cent economic cost;

● computing for teaching purposes to be free;

● all charges to be paid by the user department—and not to be passed on to research councils in the case of projects supported by research councils;

● money raised to be used to supplement the income of the regional centres and help towards computer replacement.

The indications this week were that the symposium would be told that polytechnics should be invited to collaborate with universities in sharing computer facilities. One paper argued: "It is likely that by considering joint provision there could be an overall saving in the net investment in computers for teaching."

The symposium is expected to discuss the possible establishment of computing networks linking universities and polytechnics. Such networks might take away many of the reasons for existence of the Computer Board.

Among the proposals for the future of the board expected to be advanced at the meeting are suggestions that its functions could be taken over by the UGC or the Central Computer Agency, a government body.

Another proposal is that the Science Research Council should take responsibility for the large "number-crunching" machines needed for big research projects, while the computer board should provide finance for special university computers to meet specific needs.

One paper argues: "The possibility of collaboration in networks now appears to offer both the board and the research councils some opportunity of mitigating the effects of recent economic measures."

On finance the symposium will be told that the board must spend at least £9m a year at today's prices to maintain university computing at its present level. The board is concerned about the lack of collaboration between the universities and International Computers Ltd, Britain's major computer company.

Overseas students cost up to £75m a year, Tory says

by Frances Gibb

Overseas students in further and higher education are costing the British taxpayer between £45m and £75m a year, Dr Keith Hampson, secretary of the Conservative parliamentary education committee, claimed this week.

Speaking at Otley in Yorkshire, he said: "The lower figure is a minimum. If you take account of all institutional overheads, capital and recurrent, the very much larger figure is right."

He called on the Government to set up an urgent review of all fees and to consider putting them on a cost-related basis. "In the light of the stringent economies being forced upon us, we cannot afford to ignore the 54 per cent increase of overseas students in higher and further education that occurred between 1971 and 1974 and which is still growing progressively."

The gap between fees paid and actual cost of educating a student, particularly in engineering and technology for which the majority of overseas students opt, had grown to ludicrous proportions, he said.

The cost of a university postgraduate engineering course, for example, was about £4,000 of which a student paid about £320. "There is no case for keeping fees at a level which means in practice that students are paying only 10 to 20 per cent of the cost of the education they are receiving."

He suggested a system of fees related to the true costs of courses as exists in the colleges of education. Help for deserving students from developing countries could be provided chiefly by the Ministry of Overseas Development's students fees awards, which would have to be expanded well beyond the current £0.5m budget.

Too many awards went to students already sponsored by their governments, who paid so little in fees that the amount left for maintenance enabled them to live at a standard of living much higher than many British students.

The fastest-growing group of overseas students was from the Middle East, who were not in need, and were often studying on the most expensive courses, he said.

At present there were about 53,164 overseas students in further and higher education in Britain. The rate of increase from 1973 to 1974 was 18 per cent, compared with 8 per cent in 1970, and this year's increase has been even greater, Dr Hampson said.

Some departments had acute over-balancing problems. At the University of Manchester Institute of Science and Technology, 70 per cent of postgraduates were from overseas. At Imperial College, London, overseas students formed between 60 and 85 per cent of some one-year postgraduate courses.

● About 1,500 students from the London area demonstrated last week outside the offices of the Inner London Education Authority against any reduction in Government support for overseas students.

Commons hold brief debate on 16–19s

Additional provision for the 16 to 19-year-old age group, as promised in the Queen's Speech, was only briefly touched on during the Commons debate on education on Monday. Attention was primarily devoted to the Government plans to compel local education authority to introduce comprehensive education.

The Government's commitment to help this age group was commended by Mr Norman St John-Stevas, chief Opposition spokesman on education. Good intentions were all right; but they knew that the way to hell was paved with them. The Opposition looked to the Secretary of State to outline the Government's plans to review the organization and disposition of further education in schools and colleges.

Mr Mulley, Secretary of State for Education and Science, said they wanted to increase the opportunities for about 300,000 boys and girls who entered employment each year and who received little or no further education and training.

It was not simply a quantitative problem. As well as further provision of places and courses, they needed new departures and concepts, new curricula and, above all, the closest cooperation between educational and training interests.

This was what the Government had been engaged upon for some time and he hoped that a statement on this matter would be made shortly and that they would be able to have consultations with all those involved, including education and training interests, employers and trade unions.

Mr Mulley said: "What we particularly want is to do more work on curricula research and to get some pilot schemes of a practical kind as soon as we can."

He accepted the desirability of closer connexion between the last years at school and the further education colleges and he was glad that many schools and authorities were pursuing it. His powers of enforcement were limited.

During the debate Miss Janet Fookes (Plymouth, Drake, C), spoke about the problems of standards and literacy.

There were many causes for the decline in these areas, she said. One lay in teachers who had not been properly trained.

ARC promises to continue support regardless of funds

The Agricultural Research Council promised this week to maintain its present level of support for university research even if next year's funds fail to reach expectations. Dr W. M. Henderson, ARC secretary, warned however that if the council was forced to pay overheads for research in universities, fewer projects could be accepted.

For the first time there were more good project applications than funds to support them, he said, and the council this year turned down about 10 per cent of all projects passed as scientifically sound because of lack of funds.

Introducing the council's annual report, Dr Henderson warned that it was becoming increasingly difficult to maintain the "right climate" for good, productive research. He said that transfer of funds to the Ministry of Agriculture, Fisheries and Food for use in commissioning ARC research work had taken place without serious consequences. Nevertheless, the general shortage of money had inhibited progress.

The annual report says that as most agricultural research is necessarily long term, it may not be possible to make up lost time: "We are now benefiting from research done 20 or more years ago." One example, announced this week was a new variety of Cox's Orange Pippin, a dessert apple named "Sinitan" with improved qualities and appearance. It is the result of a cross made in 1955 between Cox and Court Pendu Plat.

Of its total income last year of about £34m, the ARC spent most on animal health, closely followed by protection of crops against weeds, pests and pathogens and soil science. It plans for a growth of just under 2 per cent in its budget next year, but without knowledge of what the Government will give it.

The European Economic Community has placed four research contracts with the council. Dr Henderson emphasized that such developments were inhibited by "attribution" procedures, where money supplied by the EEC from the common fund is considered as Ministry of Agriculture money and deducted from the ministry's contributions to ARC research. He said these procedures were closer to attrition than attribution.

'CLEA's plans will not harm the universities'

The universities cannot claim their interests are being eroded in the new plans for higher education outlined by the Council of Local Education Authorities (CLEA), an article in the current issue of *Education* claims in response to a recent *THES* editorial (November 7).

The editorial argued that the Further Education Advisory Council in the Regions (FEACR) proposed by the CLEA did not take account of the partnership between the universities and teacher training colleges that has matured slowly and hesitatingly but more and more effectively, over some 85 years".

The article in *Education*, the journal of the Association of Education Committees, points out that the FEACRs will contain the Regional Committees for the Education and Training of Teachers (RCETT) which are the same bodies the universities favour for the task of planning induction and in-service training.

Second, universities are being offered a voice not only in the planning of initial teacher-training but for the whole of higher education in the public sector.

Third, the CLEA has stated that it will welcome any suggestions from the universities on ways in which their essential academic interests can be safeguarded. "It is difficult to see how an advanced and non-executive body like a FEACR can threaten anyone or anything", the article says.

The THES editorial also argued that if universities were part of the new advisory bodies, they would be accepting implicitly that universities should be part of any new regional machinery for higher education that developed in England and that such a union would have profound implications for the universities.

"Come off it, *THES*", the article counters. "What would the dons say if they were not brought into these regional higher education arrangements?"

Leeds set for £1m surplus

Leeds University may have a surplus of up to £1m at the end of the current session, when it had expected to be in the red by £600,000.

This rapid recovery from the brink of bankruptcy is being attributed to stringent economies in the past year, the Government's £6 pay limit and the fall in the rate of inflation.

Mr Edmund Williamson, the bursar, believes that many universities will be in a similar situation. "But the University Grants Committee is well aware of it and this is likely to be reflected in its grants for 1976-77", he said.

The projected £1m surplus was announced at a meeting of Leeds University's finance committee.

In April a deficit of £336,000 was estimated for the current session. Now the Government's anti-inflation policy together with additional economies made inside the university look like turning that loss into a surplus of £500,000. Added to a surplus of £489,000 accumulated at the end of last session this leaves the university £1m to the good.

Crosland joins the critics

Mr Anthony Crosland, Secretary of State for the Environment, has called for tighter control over public spending on higher education. He claims that higher education is a regressive form of social expenditure and should be restrained.

Mr Crosland pinpointed higher education as a low priority form of expenditure when he gave a lecture in Costa Rica recently on "Social Democracy in Europe". The practice of public spending, he said, needed to be reformed. In particular higher priority should be given to social expenditure which was unambiguously progressive, like cash benefits to the old, sick and disabled.

He added that regressive expenditure should be restrained and named higher education as an example. Public expenditure, said Mr Crosland, would only play a progressive role in Britain when the reforms were made.

The full text of Mr Crosland's lecture "Social Democracy in Europe" is available in Fabian tract 438, published by the Fabian Society, 11 Dartmouth Street, London, S.W.1.

THES Christmas competition

After the success of our Christmas competition last year, *The THES* is once again offering six prizes for short parodies of features that appear in the paper week by week.

Our readers this year are invited to submit 400-word parodies in the following categories:

● A book review
● A fragment of Don's Diary
● Their worst student essay of the year
● The next speech by Lord Crowther-Hunt.

Three prizes of £20 and three of £10 will be awarded to the most entertaining entries. Any other contributions that are printed will be paid at our normal rates.

Entries should reach *The THES* by December 12, marked "Competition". Our address is: *The THES*, P.O. Box 7, New Printing House Square, Gray's Inn Road, London WC1X 8EZ.

NEXT WEEK

The SSRC: ten years on
Guide to political groups in the NUS
Profile of Gwent College
Trends in university philosophy
Professor Sidney Pollard reviews The Age of Capital by Eric Hobsbawm
Rene Thom on catastrophe theory

'Intimidation' lecturer wants transfer

Mr Dumlan Duggan-Ryan, the senior lecturer in economics at the Polytechnic of North London who last month claimed to be the victim of an intimidation campaign, has applied to transfer from the polytechnic's business studies department.

The move, disclosed this week by Mr Tom Roberts, an assistant director of the polytechnic, comes after a successful appeal by Mr Duggan-Ryan for an internal inquiry into his case. He claims he was forced to give up his leadership of the polytechnic's Higher National Diploma sandwich course in business studies and timetabled out of all his courses within the department.

Mr Roberts revealed that talks had taken place between himself, Mr W. J. F. Jenkins, head of the department, and Mr Duggan-Ryan. As a result Mr Duggan-Ryan had returned to his teaching duties

NUS Wales conference

Government told 'gloves off over devolution'

The Government was delaying devolution because a Welsh assembly would not back its policy of reducing public spending, a student conference was told at the weekend.

But students should refuse to accept this. They should fight the Government and force it to honour its election promises, Mr Alistair Stewart, the deputy president of the National Union of Students, told the NUS Wales conference at Aberystwyth. Mr Neil Caldwell, the chairman of NUS Wales, said the Government was trying to stifle the debate on devolution but it was the job of students to see that this did not happen.

The conference agreed to launch a massive campaign around the Welsh colleges to make sure that the issue was kept alive and discussed fully by all students. NUS Wales is already committed to supporting the transference of power to the principality and wants every facet of education, including the University of Wales, to come under the direct control of an elected assembly.

Mr Stewart said: "We must make it clear to the Government that the gloves are off and they are in for a real fight."

He told the conference, which was deciding the future policy of the NUS in Wales, that they must oppose all moves to cut spending on education and other services. "The Government is committed to a policy of cutting public spending and to do that it must retain as much central control as possible,

"If you are going to do that you cannot devolve any power to people with better sense, to locally based people who know the problems of their area and how they want their money spent to deal with them, I think that is the reason behind Harold Wilson's decision to delay devolution for as long as he can get away with it."

The conference decided not to press for a Welsh-medium university college, Coleg Cymraeg, to be set up even though this was first suggested by students and is being studied at the moment by a University of Wales working party.

It was agreed that in the long run it would be better for the Welsh language if they sought more bilingual teaching in the existing colleges rather than segregating Welsh speakers by putting them all in one centre.

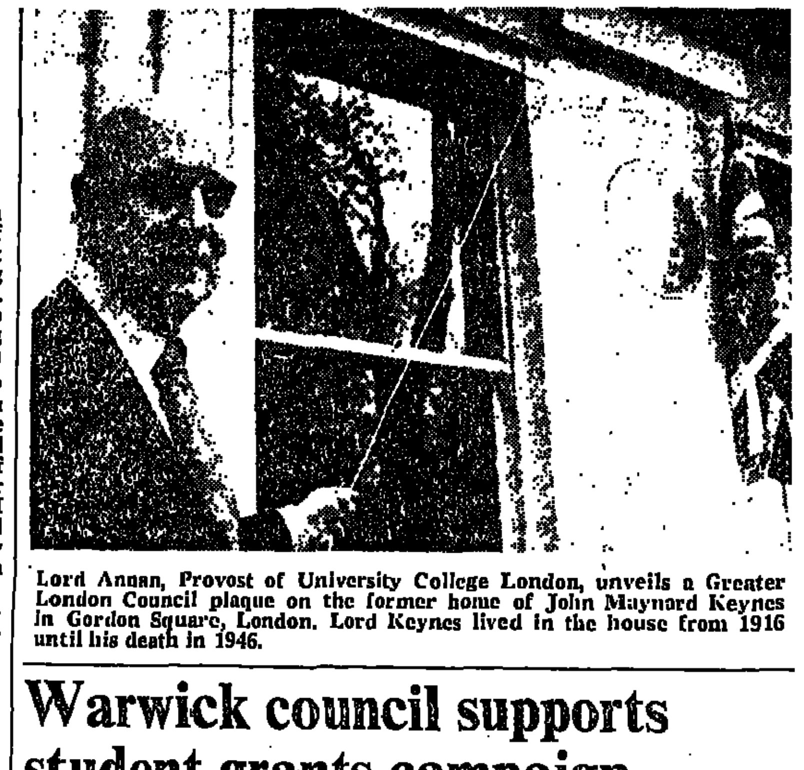
33 per cent grant rise sought

The National Union of Students is to demand a 33 per cent increase in student grants and an end to the parental means test, Mr Alistair Stewart, deputy president of the union and convener of the NUS national grants campaign, has revealed.

Speaking at the NUS Wales conference this week Mr Stewart said the NUS was planning to campaign for an increase in student grants from the present £740 a year to £985. The union, he said, would also be demanding an end to discretionary grants and the parental means test, which was forcing many families to find money they could not afford.

Mr Stewart said that the size of the demand had not yet been formally agreed but he claimed that the campaign would be announced after a special NUS meeting.

"It is a high figure but it is the one we must go for. To seek less would mean us negotiating a drastic drop in living standards for a great many students", he said.



Lord Annan, Provost of University College London, unveils a Greater London Council plaque on the former home of John Maynard Keynes in Gordon Square, London. Lord Keynes lived in the house from 1916 until his death in 1946.

Warwick council supports student grants campaign

by David Walker

Strong support for the student campaign for increased grants came yesterday in a statement issued by the Council of Warwick University. The university said the parental contribution system was inadequate and that rent and food charges demanded by the universities was more than students could afford because of national policy laid down by the Department of Education.

"Conflict between students and university authorities arises over issues which can only be settled by national decisions. If such conflict is to be avoided, in the best interest of all, the student grant must be raised to a level at which financial disparity between students and other members of society ceases to create bitterness."

The university criticized the way campus accommodation construction was financed by loans with loan charges then passed on to students through high rents. The position of students had "greatly worsened" since the University Grants Committee introduced its present policy.

"The costs passed on, in which the university is primarily concerned, are residence and catering. The inadequacy of the grant, however, is intensified by the rising cost of many other essential items students must acquire, the most important example being books.

"The problem has been further accentuated by the inadequacy of the increase in the grant over a number of years and, therefore, taking this year's grant as basis for the increase for next year, will not produce a reasonable grant. Calculations must be made to get back to an adequate base line."

Despite the arguments of the Committee of Vice-Chancellors and Principals and the National Union of Students the Government awarded students only £740. It was expected that by February next year students would be getting only two thirds of what they should have received if the CVCP student cost index were used.

● Students at Leicester Polytechnic were sleeping five to a room in official accommodation at a cost of £12.00 a week each, the students' union claimed this week. A rent strike has been called to get rents reduced to £10 a week.

Learning by post is best, teenagers say

by Frances Gibb

A significant proportion of the 16 to 19 age group who chose to study by correspondence progress better than adults on the same courses, a survey on "Distance Teaching and Young People" in the November issue of *Adult Education* concludes.

Based on 124 students of this age group taking correspondence courses at the National Extension College, the survey shows that a large proportion (51 per cent of girls and 39 per cent of boys) rated correspondence study as equal to or preferable to class teaching. "But this could have more to do with poor experience of school than a positive liking for the system", the article says.

The students, most taking GCE courses, completed more assignments over one year than adults taking the same courses.

Of students who were at work, girls completed more assignments than boys (69 per cent compared with 44 per cent) but found correspondence courses more difficult. Many had commitments of homes and families. Of students still at school, more boys than girls found correspondence courses difficult: 43 per cent compared with 36 per cent of girls.

Reasons given by those still at school for choosing to study by correspondence include subjects not being available and timetable problems. For those at work the reasons were lack of local courses and job constraints such as shift work.

The problem of isolation arose chiefly with students at work. As many as 83 per cent said they would attend a local college for the occasional seminar linked to their courses and the majority were willing to pay an extra fee for it.

Funds should be provided for setting up an Open College offering courses specifically designed for the 6-19 age group, the article concludes.

Not only did students choose this form of study and do well at it, but correspondence courses could also be an effective and economic way of overcoming schools' staff and timetable problems.

Sussex to take more students

Sussex University is planning to increase its student numbers by 200 in 1976-77. The expansion will be largely in the arts and education.

At a meeting of the university's planning committee, it was decided to add about 25 posts to the nominal staff total in arts and education in 1975-76. These would be financed mainly from not filling science vacancies. Staff in the Centre for Educational Technology might also be transferred to boost the staff.

All these plans would be reviewed in February 1976 in the light of student applications for the next academic year.

Are charters 'legal fictions'?

The annual conference of the Society for Research into Higher Education will be held on December 17-18 at Bedford College, London.

It will open with a discussion by Professor G. C. Moodie of York University and Mr Rowland Eustace of the Centre for Environmental Studies in London on whether university charters are merely legal fictions.

Other sessions will hear Mr John Fielden, a business consultant, discuss the rise of the university registrar as the historical parallel of the "decline of the professor".

Mr Michael Shattock, registrar of Warwick University, will give a paper on "the financial constraints on higher education". Professor Stanislav Andreski of Reading University will consider the relationship of universities' power structure to creativity within them.

Further details from SRHE, 25 Northampton Square, London EC1V 0HL.

Increases in polytechnic costs in 4 years

The following statistics on polytechnic expenditure were announced in the House of Commons recently by Mr Fred Mulley, Secretary of State for Education and Science, in answer to a question from Mr George Rodgers, MP.

Nett Recurrent Expenditure* on Polytechnic

Polytechnics	Out turn prices £000 1971-72	1972-73	1973-74	1974-75
Birmingham	2,388	2,835	3,160	4,448
Brighton	1,602	1,948	1,994	2,828
Bristol	1,720	2,086	2,452	3,289
Hatfield	1,956	2,394	2,785	3,963
Huddersfield	1,692	2,290	2,647	4,350
Lanchester	2,754	3,225	3,649	5,303
Leeds	2,657	3,319	3,660	4,793
Leicester	3,118	2,701	3,065	4,231
Liverpool	2,255	3,452	4,147	5,960
Kingston	2,335	3,204	3,632	N.A.
Middlesex	—	—	5,091	7,001
North East London	4,233	4,961	5,577	7,828
Inner London	13,748†	17,397	19,503	26,270
Manchester	2,841	3,710	4,196	N.A.
Newcastle-upon-Tyne	2,030	2,723	3,038	5,061
North Staffordshire	2,188	2,447	2,727	3,741
Oxford	1,261	1,591	1,878	2,864
Plymouth	1,020	1,394	1,539	2,500
Portsmouth	3,357	4,042	4,524	5,783
Preston	—	—	—	2,062
Sheffield	1,988	2,602	3,315	4,912
Sunderland	1,709	2,155	2,320	3,401
Teesside	1,100	1,493	1,788	N.A.
Trent	2,279	2,746	3,183	4,701
Wolverhampton	1,876	2,376	2,578	3,514
Glamorgan	984	1,310	1,619	[illegible]

*Excluding loan charges and capital contributions from revenue.
†Includes expenditure in respect of North London Polytechnic from April, 1971, prior to designation.

Don's diary

Tuesday 7.15 a.m.

Nasty headache again this morning. Mentally check through list of possible causes. Lack of fresh air? No, I can still see two inches of clear sky at the top of the bedroom window. And in any case the room is full of the smell of After-Eight mints. (Everyone in York lives within smelling distance of Rowntrees. People who meet each other in the street often forgo any routine reference to the weather. They just sniff the air in a slightly stylised manner, and mutter 'Smarties' or 'Kit-Kat'. Everyone knows what they mean.)

Hangover? Hardly. Nothing more last night than half-a-bottle of cheap Chianti, and that was only to help down the Marks and Spencer Lasagna (my wife goes to karate classes on Monday so I organise my own supper). Probably the new sleeping pills. I've been on Mogadon for years but my GP suddenly switched me to Dozalone last week. (Just part of his general professional deterioration, I fear. I've never been happy about his sanity since I went to see him last March about a personal itching problem and found him lying fully-clothed on his own examination couch staring at the ceiling.) Dozalone are rather bitter-tasting yellow pills. Nasty. Another morning headache like this and I'll have to borrow some Soneryl from the departmental medicine box.

7.45 a.m.

My wife throws some letters on the bed. Something from the R.A.C. telling me that I can get better recovery services if I pay another few pounds on top of my present subscription. They'll guarantee to get me home as quickly as possible no matter where the car breaks down. Sounds a little like blackmail. Pay an extra sub or risk getting left all night in thick fog by the side of the M62. Nevertheless it has no appeal for me. Breakdown or no breakdown, I rarely wish to get home as quickly as possible.

A glossy note from American Express inviting me to buy £250 worth of pig-skin luggage. If advertisements are any guide then we're obviously becoming a nation of luggage fetishists. People must be stroking and kissing the stuff at night—they can't possibly be using it all just to cary pyjamas and a spare shirt from one place to another.

8.00 a.m.

Helped my wife to make the orthopaedic bed. Surprised to find two essays on Max Weber under the bottom blanket. Crumpled but still legible pieces on the protestant ethic. Didn't recognise the students' names. Michael O'Toole and Gladys Keggins. Certainly not in the present third year. Silly argument with my wife about when the blanket was last moved. Finally agreed it was when I slept in the attic during a nasty attack of gastro-enteritis last spring.

Down to breakfast. A little indigestion again despite the double dose of Aludrox I took last night. Annoyed to find that my piece on "Universities—The Way Ahead" was not in this month's *Studies in Higher Education*. Particularly irritating because it is an essay which I expect to stir up some controversy in the current debate on education cutbacks. (Basically I attempt to suggest with reference to Durkheim that the new universities are failing in their task of providing moral education for the present generation of students.) It's a tightly argued thesis with a strong philosophical edge, but I've had nothing but trouble with it since it was commissioned last July. The first setback occurred when the proofs arrived for correction in September. I was shocked to find that someone had written "Boring old clap-trap. Use only as a space-filler. Who is this pedant anyway?" at the bottom of the last page.

I've now accepted the editor's assurance that these comments were actually referring to some other article and had been mistakenly jotted down on my proofs by an office junior who has since been dismissed, but you can understand that the whole affair raised some doubts in my mind about the general efficiency, if not the academic competence, of the editorial staff.

Matters weren't helped either when the editor then rang me to say that they'd had to cut 800 words in order to make room for a contraceptive advertisement from somewhere called Premier Laboratories. He muttered something about "paying our way" and "necessary compromises with capitalism", but in effect it meant that my interesting attempt to locate the Montessori method within the teaching of the social sciences was regarded as somewhat less significant than a list of cut-price sheaths. (Perhaps I could flesh the paragraph out and send it off to *New Frontiers in Education*. A friend told me the other day that they were so short of good copy that they'd agreed to publish an edited version of his first year lecture notes.)

8.15 a.m.

Walked to work again with two pounds of sugar in my coat pocket. I have found this strategy is working rather well. My problem, you see, is that I only live three-quarters of a mile from the campus and so by itself my daily walk is hardly enough to get the heart back into tiptop condition. The sugar acts as a sort of handicap. At the moment I am trying to add an extra pound each week. Otherwise I am afraid it's back to the Allegro and regular doses of Novidrex-K.

My wife still insists on finding this sugar business faintly comical. ("Do you take sugar?" I was asked last week by the deputy provost at the annual reception for students resitting their part-one examinations. "No, only to work in his pocket", she blurted out, adding, "It's his dicky ticker, you know"—a phrase I particularly dislike.)

9.00 a.m.

Very pleased to find an invitation to visit Market Harborough College of Social Studies in my morning mail. Not on the face of it an ideal venue, but they're doing some excellent work these days at the college. Most of it is due to a chap called Turpin who graduated from here some six or seven years ago. Faced with the usual indifference to sociology by first-year students, he hit on the idea of dramatizing some of the classical works. Last time I was there I adjudicated a very commendable version of Ralf Dahrendorf's *Class and Class Conflict in Industrial Society*. The whole debate took on a new edge when you actually saw Mosca, Pareto and Marx arguing their cases up there on the boards. He'd used the stage extremely well. The principal actors were left free to wander around the central area but on the sides he'd erected three rostra which accommodated the separate choruses—*The Rising Middle Class, The Nineteenth Century Working Class*, and a smaller section who of course represented Dahrendorf's famous *Imperatively Co-ordinated Associations*. I was very sceptical before I went but came away convinced. I see from the letter that they're having a shot this year at Marx's *Economic and Philosophical Manuscripts of 1844*. Turpin certainly loves a challenge.

9.45 a.m.

I was lying on the floor taking a telephone call from the vice-chancellor when the departmental energy officer turned up to see me. (Taking telephone calls on the floor is one of the more mundane effects of the economic cut-backs. Having exchanged the position of my desk and bookcase last year because the university could not afford to replace the broken blinds which had previously shielded me from the sun, I then found that they couldn't find the money to extend the telephone line. There is simply no alternative but to take all my calls at floor level).

Basically, the energy officer's job is to keep an eye on the use of heat and light around the department. We gave the job to one of our colleagues who's unable to do much actual teaching because of his extreme nervousness about speaking in public. I'm afraid all got a bit out of hand in recent months. At first it was a series of minor irritations, like his predilection for switching off the lights in lavatories without checking to see if the closets were all vacant, or his attempt to organise a general departmental coffee break so that the kettle might be used more economically. But lately his enthusiasm for the task has reached an obsessional level.

10.30 a.m.

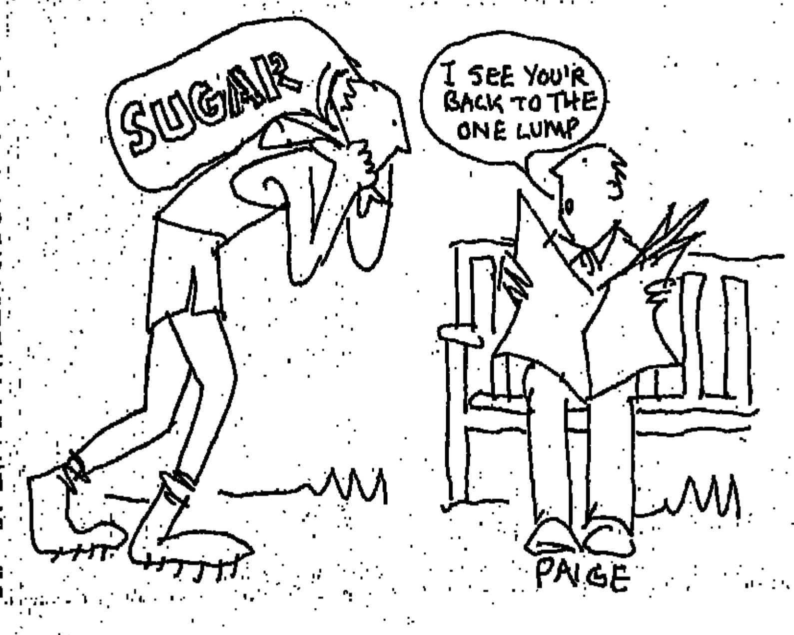
Today he was anxious to secure my backing for a scheme to run the electric typewriters off second hand car batteries. I humoured him for a while—even pretended not to notice that he'd turned my radiator down by at least 10 degrees—but really he looks more and more like a man who could do with an extended course of Drinamyl. Unless we curb him soon there is a serious danger that some of our more senior staff members will contract hypothermia in the hard months ahead.

11.30 a.m.

Call from Cardiff University asking me to give a talk on dental caries at a forthcoming symposium on advances in dentistry. Was lying on the floor trying to explain that they'd got the wrong person when my desk light went out. The maniac had obviously found the fuse-box at last. I pulled my coat around me—the room was already getting distinctly chilly—and swallowed my first Valium of the day.

Laurie Taylor

The author is Professor of Sociology at York University.



Thoughts on being sat-in upon

ERIC E. ROBINSON

Representatives of the college students' union occupied part of my office for 10 days as a demonstration of protest against "education cuts" and some of their manifestations in the college. It was not a grand occasion, for there was little flurry or fuss and we did not feature in the national papers or on television. Perhaps this was because the statements and demands of the students were reasonable and, allowing for the act of occupation itself, their behaviour was eminently so.

Direct action of any kind requires courage and it is frightening. For most of us in the academic world it is a rare and therefore rather shocking experience that can evoke some surprising and unexpected reactions. I was frightened when the students appeared, indignant later when they denied me admission and outraged that they had picked on me.

I remember vividly my first experience of strike action and my second. The first was in my student days when I was fruitpicking in Suffolk and the second was a teachers' strike in Enfield. On both occasions I was unprepared for the intensity of passion that was aroused, the venom between erstwhile friends and colleagues that was suddenly generated. Perhaps I have been lucky or blind but in my experience of direct action by students there has been little of this. Certainly there was no sign of it last week in Bradford and the only one who got excited during our talks was me.

Most of the accounts I have heard and read of negotiations between student leaders and academic authorities have come from the student side. They invariably depict the students as controlled and rational and the academics as petulant and undisciplined. This may not be quite the distortion it appears to be. Much of the strength of student militancy lies in its potential in forcing academics into unfamiliar situations in which they react as ordinary, and possibly somewhat inadequate people.

The Bradford students were protesting about financial decisions of government, national and local, but they were also dissatisfied about decisions of priority taken within the college. In their view unacceptable economies had been made in recreational and health facilities. They had the support of some teachers in this and in their complaints about conditions in the classroom.

It was a depressing reflection of the confidence of students in the authorities and the teaching staff that the question of "victimization" was very prominent in the discussions that terminated the demonstration. The main lesson to be learnt was that economy measures must be thoroughly and extensively discussed in advance.

It is now certain that the financial difficulties in education will get much worse before they get better. During the next few months the worsening will be most apparent in the local authority sector and I will not be the only principal to be put through the mangle. The senior people in colleges and polytechnics will earn their money during the coming months. There will be no need of Marlene Dietrich to separate the men from the boys. Money for higher education is to be cut and cut again. It is natural and right for us to fight a rearguard action as we retreat but it could be suicidal merely to stand in position.

Those who exercise power must either resign or lead the implementation of the cuts according to priorities for which they will be held accountable. The most painful dilemma facing us nationally and locally is whether to cut student numbers or to cut the standards of provision. To keep students out in order to maintain standards for those who are in will be the easiest way to keep the internal peace. It has at least two flaws.

It essentially maintains the position of those inside at the expense of those excluded (already a very real issue in further education if not yet in higher education) and thereby offends at least the declared ideals of the students' and teachers' unions.

It denies educational opportunity to members of a public that is not persuaded that our resources are being efficiently used.

In some areas of higher education institutions will simply not be permitted by the external authorities to meet the cuts by corresponding cuts in student numbers.

These are the areas in which we can expect major troubles with students and probably teachers in the near future. Outstanding among these is the polytechnic field. The failure of the polytechnics to read the writing on the wall about staffing ratios makes them the obvious candidates for the axe and it is surely about to fall.

The consequential uproar in the polytechnics will make the present unrest in the universities seem insignificant. Its effects in many polytechnics will be the worse for their lack of preparedness to face the problems.

It is not sufficient for the people at the top to accept the necessities of the situation. If we are to avert the total disaster of a massive and abortive fight against irresistible financial pressures we have to involve teachers and students, possibly even more fully than they are inclined, in the very difficult decisions of priority that have to be taken.

It is no use the academic board or the finance committee making decisions of priority, however rational and defensible, if the reaction in the classroom and the staffroom is one of incomprehending resentment and despair.

The industrial dramas recently played out on television and in the press have important lessons for higher education although this may not be immediately apparent. Not so very long ago the crises of Rolls-Royce, Leyland and Chrysler would have been unthinkable. That which is now unthinkable in higher education may become the reality tomorrow.

The experience of *The Observer* newspaper might prove particularly apposite. Quite simply the staff was faced with the necessity of volunteering redundancies as the price of survival.

As in industry, a popular solution of the problem of survival is the syndicalist one—of workers' control. Hitherto it has been tried in industry without notable success. Syndicalism of a kind is respectable in academic institutions. Will it be more successful there in meeting the problems of financial crisis?

One of the outstanding problems is about the membership of the syndicate. If colleges are to come under workers' control whom do we define as the workers? Traditional academic syndicalism includes only the senior staff, but there is a modern version that includes the junior staff, the students and even the non-teaching staff.

There are signs in a few polytechnics of a more serious movement towards such syndicalism than in any university. One of them curiously enough was once styled the Rolls-Royce of the polytechnics. This development suggests some interesting questions in the light of industrial experience. The most intriguing is to identify the Tony Benn of education, complete with moneybags. Another is whether the academic syndicates would find the problems of management as difficult as the industrial syndicates have done. A third, and most intriguing of all, is how the public interest or the "market" would relate to the syndicate so that it did not become merely a self-protective or even self-indulgent mechanism.

We are all so afraid, afraid of ideas, afraid of challenge, afraid of the young and afraid of change. The intelligent response to student and junior lecturer militancy is not the repression that is now so widely advocated. It has been tried without success and has damaged us more than the militancy itself.

It is time that in one or two institutions the new syndicalists were given a "fair go". For them to have the experience of management and accountability to the public would be worth more than years of preaching by both sides.

Frances Gibb interviews Roy Shaw, secretary-general of the Arts Council.

Between people and their pleasures

The Arts Council last month issued its gloomiest statement for several years. It claimed that its work, which supports about 1,000 opera, theatre, and ballet companies, orchestras, and community and regional arts associations, could collapse. The arts, like higher education, are one of the first items in the public expenditure list to feel the axe at a time of economic hardship. They both find it difficult to cope with financial difficulties, because they are geared to long-term planning and are unable to adjust quickly to changed circumstances.

Mr Roy Shaw, who was appointed secretary-general of the Arts Council this year, has asked the Minister for the Arts for a 60 per cent increase in the council's annual grant for 1976-77 which would take it from £25m to £40m. This will keep the present provision as it is but not expand it.

Justifying the arts at a time such as now is not hard, argues Mr Shaw. "In times of financial difficulties, the arts are more necessary, not less. They are indispensable to the health of the nation. I know that it is an extremely difficult time for the Government to make more money available. There is also a long tradition of under-funding the arts in this country, and it is painfully obvious that we are failing to meet our obligations for the arts.

A recent Labour Party policy document proposed that about 5 per cent of the education budget should go on the arts, which would amount to about £250m. This is about 10 times its present level, which is £26m, of a total education budget of about £5,100m a year.

While unwilling to comment on a party policy, Mr Shaw agrees 5 per cent would be a reasonable figure. In the meantime, the exact figure of next year's grant will not be known until February, and enormous problems are being created: arts organizations like theatres and orchestras should have made their plans for this period. But they have had to make them without proper knowledge of the future.

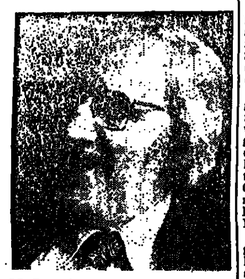
Universities, polytechnics and colleges are affected by the situation. Most of the college theatres and arts centres, such as the Guggenheim at Kent University, the Nuffield at Southampton and the Gardner at Sussex depend heavily on the network of touring companies, musical groups and exhibitions. The Arts Council gives over 2,000 grants to these smaller organizations which would collapse if the grants were stopped.

Mr Shaw will not list priorities among the national, regional, community organizations, individual artists and small companies he allocates grants to, and says he will fight to keep what he has. "I am not prepared to think of cutting anything; nothing is more expendable than anything else." In the past, the Arts Council have been criticized for keeping quiet about its wants, but ironically Roy Shaw has come under fire for speaking out against the Government.

He is unrepentant: "Perhaps in the past the Arts Council has been too silent about the real needs of the arts. The Arts Council has a curious intermediary role between the Government and arts organizations. It represents the Government in spending money but must represent the arts organizations in telling government or public opinion what the arts need in order to survive."

The fault is not entirely the Government's, he adds, but partly the public's general attitude, which does not acknowledge the value of the arts. "I am simply saying that public opinion is not adjusted to meeting the real demands of the arts, and the Government can not go very far ahead of public opinion."

This fight here is less obvious than the economic one, as Mr Shaw is up against a long British tradition of anti-intellectualism. His answer, as a former specialist in adult education, lies in education. "Mass democracy will mean cultural decay unless the state spends



Mr Roy Shaw

more money on education, including adult education, and unless it endows the arts more generously."

His main concern is therefore increasing knowledge and understanding of the arts. The council's other function—to make the arts more widely available—is useless without this, he says. "You don't make the arts accessible to large numbers until you have increased provision, and also improved the education so that people can benefit." He dismisses the argument against giving people opera when they want pop though he acknowledges its force. But he does not support the Roth remedy of giving them what they "ought to have" without regard to their wishes. "While it is true that few people want art, I don't think it follows that few people need it, and we must educate people to want what they need."

Popularization of the arts does not mean diluting their quality—more does not mean worse. He deplores the opposition of a high and a low-brow culture. "The $64,000 question is whether you make high art available to more people, or whether you say high art is irrelevant to most people's experience, and that there should be provision for alternative forms, of which community art is the foremost example. There is a range of artistic experience, from the most popular to the most refined."

With his experience in adult education, he is aware of the problems of reaching a majority of the population and is particularly fitted to solve it. At Keele University, where he was director of the extra-mural department for 13 years, he tried to attract that section of the working class that the Workers' Educational Association had failed to reach. Adult education departments in colleges and universities, therefore, can take a more active role both in making the arts more available in promoting understanding of them, he says.

He also suggests broadcasting. As a former chairman of the Standing Conference on Broadcasting, a member of the Open University planning committee, and with experience of BBC local radio, Mr Shaw is a strong advocate of this method of contact.

"Education is not only central to the arts; it is indivisible from them. "I'd like to see arts and education hyphenated to indicate that it's two aspects of a unique activity." He plans spending more on educational activities in the coming year, and hopes that current projects, such as exhibitions, art museums, lectures and booklets will spread throughout the country.

This emphasis on the regions is probably one reason for his appointment, as a man who comes from them he is the right person to lend credence to the Arts Council's policy of decentralization, a policy reflected in the increasingly large grant accorded to the regions every year. It is a policy he intends to continue and hopes to devolve more responsibility. At the same time he believes the local authorities have a big part to play. He wants to see a far closer working relationship between all three agents: the centre, the regions and the local authorities.

Colleges, particularly in the regions, therefore have a clearly-defined role in Mr Shaw's policy. But he is wary of the danger of making the arts more isolated or intellectualized.

Mr Shaw's mission is to raise the status of the arts by placing them firmly with education: one of his priorities is to have a council officer responsible for education. At the same time, however, he can do education a service by showing it has something to do with enjoyment.

The well-rounded geographers

With its new professor about to take up his appointment, David Walker looks at the geography department at Cambridge University.

To those who believe in the conspiracy theory of history, the St Catharine's connexion in British geography is a god-send. Professors Ray Pahl of Kent, Peter Hall of Reading, Michael Chisholm of Bristol, and C. Pugh of King's London, and Professor Darby himself to name only a few went through the college and the department.

Since the Second World War moreover many of the St Catharine's geographers who went on to become professors, readers and lecturers were taught by one man, Mr A. A. L. Caesar, now the senior tutor.

In fact, to dispel the conspiracy, the reasons for this academic configuration are down to earth. St Catharine's was one of the first colleges to offer awards in geography; it established a network of contacts with sixth-form teachers many of whom later were its own graduates, and with particular schools like the Royal Grammar, Newcastle.

What intellectual influence this relationship had on British geography as it became established outside Cambridge is more difficult to unravel. On Mr Caesar's bookshelves there are whole rows of respectable geography textbooks and monographs by St Catharine's men; he himself was an intellectual stimulus to his pupils, many of whom still regard him with deep affection.

As in the department's broader intellectual influence, most of the professors who were undergraduates there would deny there is much cohesiveness among them. To Professor H. Bowen-Jones, of Durham, the proximity of the natural sciences in Cambridge gave teaching and research there an intellectual edge, a sharpness. However, one of the Bristol geographers warned that chance had a role in all these arrangements and recalled that Cambridge always attracted able people in all subjects.

They agree on one thing. The geographical education at Cambridge always had a roundedness which taken with the intellectual and social atmosphere of department and colleges—St John's and Fitzwilliams are strong geography colleges like St Catharine's—boosted its reputation.

Professor Darby's own career matches the department's ethos of disciplined thought within a geographical catholicity. It has taken him to University College, London and to Liverpool, to America, and recently to his fellowship of the British Academy and chairmanship of the British National Committee for Geography under the Royal Society. Since he came to Cambridge in 1928 his career has also paralleled the burgeoning of geography in Britain.

These years covered the emergence of geography as a subject with expertise of use to government. Professor Darby himself has served on the Water Resources Board, a docks authority and the Royal Commission on Historical Monuments. For many geographers the boom in planning jobs from the growth and reorganization of government representing the subject's salvation. But Cambridge's formula of mixed physical, economic and historical geography survived that trauma.

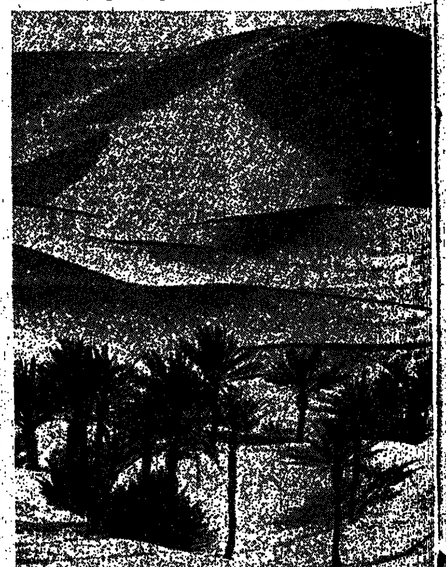
Professor Darby says: "Admittedly a man working on the erosion has not much in common with a man studying Domesday geography. But most people have links in physical geography and no matter how diverse their specializations there remains a basic geographical attitude.

"Call it a cartographic or a spatial sense, there is a basic unity of thought among geographers. For instance, it is something I feel most keenly when among historians: it is a distinctly different discipline."

In fact the students who emerged from Cambridge in recent years have mainly specialized in economic geography — arguably the best preparation for a career in planning. There are roughly four economists to two historical and one physical geographer among part-two students.

In part one, the students have to offer geographical method, physical papers (say, biogeography and fluvial geomorphology), cartography and statistics, economic geography, historical geography and an optional paper (which could be either say, East Anglian landforms or the cultural geography of Middle America).

The department has about 4 research students doing doctoral work, and it is likely that with the advent of Professor Chisholm the question of a taught master's degree course will be raised. Whatever changes the new regime brings, it is unlikely to affect the department's faith in high calibre staff and the high standards demanded of students individually and collectively.

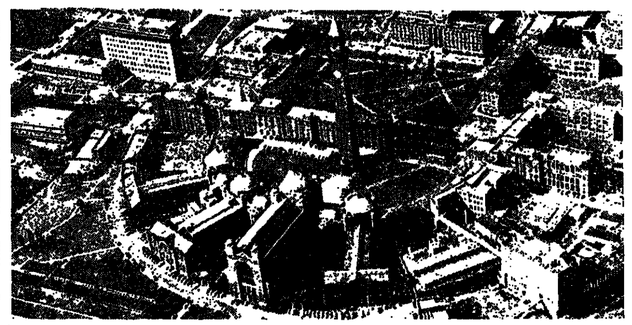


Picture copyright George Rodger from the monograph published by Gordon Fraser

The Great Western Erg of the Algerian Sahara: Cambridge has always been strong on landforms and soils.

Peter Wilby interviews Dr Robert Brockie Hunter, the vice-chancellor of Birmingham University

A provocative Scotsman with a scalpel-sharp mind



Dr Brockie Hunter and an aerial view of Birmingham University.

When Warwick University students raided their vice-chancellor's files during a sit-in in 1970 they found a confidential note from Sir Christopher Cox, then an advisor to the Ministry of Overseas Development, concerning a conversation with Dr Robert Brockie Hunter, vice-chancellor of Birmingham University.

The conversation was a follow-up to an earlier talk about Birmingham's links with the medical school in Salisbury, Rhodesia, and Sir Christopher concluded his note by saying: "I thought I had probably underrated his intellectual calibre in our earlier talk and I should certainly modify now what I said then about it." (What he had said then, it transpired, placed Dr Hunter in a sort of Third Division North of Intellects).

Leaving aside the matter of the peculiar academic disease of passing sweeping judgments on people's intellectual calibre, and grading their minds like eggs, it was an easy mistake for Sir Christopher to make. Though he does not have a strong Scottish accent (except when he says words like "afoot"), Dr Hunter is much as a Scotsman should be: dour, canny, matter-of-fact and liking fishing as his single recreation in *Who's Who*. He speaks quietly, even flatly. He rarely philosophizes, and then not convincingly.

But face him with a defined problem and you see that he has the scalpel-sharp mind of a man with a medical training. First, the diagnosis, precise and perceptive; next, the recommended course of treatment, drastic or moderate, according to circumstances; at the same time, a comforting note in his voice, reassuring you that it won't be as bad as all that.

What Dr Hunter has recommended for universities recently is surgery. His downwatching speech at a graduation dinner last July—"we are now beginning to consume the seed corn"—was awarded that curious press accolade, normally reserved for such as Mr Enoch Powell and Mr Reg Prentice, of being reported in advance of delivery.

This paragraph that caught the eye was this: "It may well be that the build-up of some of the new universities and polytechnics will have to be delayed so that we can maintain a few quality institutions. Some might even have to be closed. The other policy (of spreading the butter thinly) will mean disaster for all in educational terms—and will delay the recovery by this country of its former greatness."

Dr Hunter is plainly not ashamed of that speech, because as soon as I mentioned it a secretary was summoned to present me with a copy. Yet, among friends and colleagues, he has a reputation for putting his foot in it, for making, without much warning, provocative statements, as if to confound those who equate dourness with dullness.

One fellow vice-chancellor was inclined to dismiss the July speech as a midsummer aberration, committed partly because it is necessary to say something in after-dinner speeches and partly because any vice-chancellor wishes to raise the spirits of his troops and convince them that the general is doing something useful. Dr Hunter admitted that he had not thought it all through in detail but, in its general drift, one suspects that he knew very well what he was up to.

He has been fairly single-minded since, at the age of 15, he went into hospital for an operation, thought that surgeons were gentlemen and decided that he wanted to be one himself. So, the son of an Edinburgh actuary, he went to Edinburgh medical school. During the war he was with the Eighth Army at El Alamein and, just before the Normandy landings, he became Montgomery's personal physician ("a good patient —he operated on the principle that he knew his job and you knew yours") and was with him when the Germans surrendered.

Then he went back to Edinburgh as a therapeutics lecturer. He applied for a Commonwealth fellowship, and was interviewed by a committee chaired by Sir James Irvine, then principal of St Andrews. Sir James was so impressed by Dr Hunter that he immediately offered him the chair of materia medica. Vice-chancellors and principals could do that sort of thing in those days though, if you want to be absolutely precise about the formalities, Sir James's offer was considered in terms of an invitation to join a selection committee.

Dr Hunter was then just 32 and his clinical career did not get the chance to live up to that early promise. He is an ambitious man and, in administration, he saw an opportunity to operate on a wider canvas, influencing decisions about priorities and resources. His success at St Andrews, in creating a new postgraduate medical school at Dundee (which was then part of the same university), is beyond dispute. At this time he began to develop his ideas about the importance of community medicine—"making the hospital truly the centre of its area", as he puts it—that were to influence his chairmanship, some years later, of a British Government committee on the subject.

Dr Hunter has also served on the University Grants Committee (for two years, as chairman of its medical sub-committee), and on the General Medical Council and on several Ministry of Health committees including, lately, one on smoking.

So it was no surprise when he was appointed vice-chancellor of Birmingham in the summer of 1968. That was hardly an easy time to become a vice-chancellor and, understandably, he floundered. During a dispute with Birmingham students over participation he made the elementary mistake of threatening disciplinary action against occupying students at the very moment when the popular tide was turning against the sit-in. The *Sunday Telegraph* education correspondent wrote an analysis of these events under the heading "Quelling Restive Students: How not to go about it".

The episode was a shock to him. "My feeling then", he said, "was one of injustice and resentment. I had spent my life looking after people in relations of trust on both sides. I came into a situation of mistrust, which had got to a congealment and confrontation stage before I arrived, and I felt that people hadn't given me a chance. But I learnt to cope—in an understanding, positive, constructive kind of way. You have to learn from the people who are attacking you and try to be open-minded."

Since 1968, his political touch has grown surer—he has piloted the university safely through the affair of Mr Dick Atkinson and through the Grimond review of its government and constitution, and its subsequent modification. "This was a matter of formalizing things. A wise vice-chancellor in the old days would probably have done most of the important things that are now enshrined in legislation. Universities are larger these days and there is a great body of staff who are not generals and are never going to be. So things have to be seen to be done fairly. You have to have a system. And you must constantly pay attention to information and communication.

"I'm a minimum confidentiality man. Everything should be open unless there is a reason. That's a much healthier way to behave. Militant students come along looking for specks of dirt. All that comes out is that people are doing an honest job. I don't know where this view comes from that universities are run as anti-student institutions. Most people in them could make more money outside."

Dr Hunter has suffered, like other vice-chancellors, from having his confidences breached by students raiding files. Was this a good thing? "No, it's not a good thing for young people to learn bad habits of breaking and entering. It's a crowd phenomenon. It leads to diminished responsibility on the part of the individual and the universities are the very places where the individual is considered important. That's the sad part of it."

We turned to the controversial July speech. What was the thinking behind it? "It was trying to say that you either give a university enough money to run a machine or you don't." But he had talked of universities being closed? "There was a strong reaction against that. Yet the Department of Education is closing down colleges of education all the time, isn't it? It is substantially reorganizing the other half of the higher education system. Isn't that right? Nobody is looking at the *whole* higher education system. It's conceivable that if universities are to change their functions there may need to be a reallocation of resources."

What did he mean by universities changing their functions? "We must be flexible and ready to meet the needs of the society in which we live—here in Birmingham, to meet the needs of the West Midlands particularly."

So did he think that Lord Crowther-Hunt, in his pre-summer holiday incantation, was a good thing? "Lord Crowther-Hunt speaks a great deal of good sense. I'm sure there's been too much misunderstanding of what he said. If you get a job as minister of the Crown, you have a responsibility. You have information about resources that are not available to other people. There is no harm in challenging people. If universities appear to be allowed to be doing their own thing, they have an extra responsibility. I'm sure they will respond."

I accepted that Dr Hunter was not going to nominate anyone to be first for the axe. But what criteria would he employ for deciding which institutions should close? "The UGC is there to advise on these sorts of things. In the past, it has concerned itself with closing down certain activities in universities—schools of agriculture, for example. In future, it may persuade universities to close down some more activities, where there is a plethora.

"It may have to persuade people that their activities might be phased out and the money spent on something with greater priority. I would have thought this was the thing to do first. Closing down institutions would be a last resort. The country would really need to be on its uppers before we would come to that."

So which of its activities would Birmingham phase out? "Birmingham is looking at its activities in the light of national needs and what is happening elsewhere. These are hard decisions. You need a degree of cooperation between sister institutions. The UGC can be an honest broker. I have admitted that every part of this university is not excellent. But there is something to be said for holding together large institutions in which £50m or £60m has been invested. Manchester University, for example, is a complex, interlocked system. It has to be kept going like British Leyland."

Birmingham is also a complex, interlocked system and simply to have kept it going is an achievement for Dr Hunter. He does not have a common touch and student representatives complain that he treats them with disdain. In negotiation, they add, he can be obtuse. To most people at Birmingham he is a remote, bureaucratic figure. Nevertheless, Birmingham's new charter and statutes have been introduced without fuss and its union leadership, in recent years, has been noted for its moderation.

In a university where hierarchy has long been entrenched, Dr Hunter has steered a clever, careful, middle course between an active radical group among the staff and a group of exceptionally hard-line traditionalists. He is an administrator's administrator and his July speech was an administrator's blunt view of what needs to be done about British higher education.

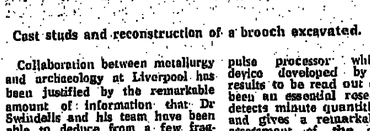
Metallic Arthurian secrets from a Celtic fortress

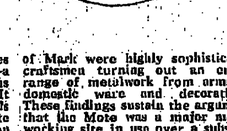
The Celtic metalworkers of Arthurian times wrought with a cunning which enabled them to match their materials to their purpose. New research at Liverpool University on bronze and iron relics excavated from a fifth-century Celtic fortress on the west coast of Scotland shows that the ancient craftsmen made alloys intended for decorative pins and brooches quite differently from those intended for practical purposes.

Dr Norman Swindells of the metallurgy and materials science department used an electron-probe microanalyser to examine bronze studs found at the Mote of Mark, a granite outcrop near Dalbeattie, Kirkudbrightshire, which shows evidence of being a "vitrified fort" occupied during the period 475-625 AD.

Originally investigated by Dr Alexander Curle in 1913, the site was re-examined in 1973 by Dr Lloyd Laing, lecturer in medieval archaeology at Liverpool. Dr Swindells discovered that bronze pins contained, in addition to the usual copper and tin, an unusually high proportion of lead, a clear sign that the pins were intended for decorative purposes, because bronze alloy so mixed to improve fluidity in the moulding process could not be hammered when cast. The pins could not therefore have been tacks or nails; these were also discovered at the site but they contained only a low proportion of lead.

Analysis using the Japanese-built microanalyser is only one of the metallurgical techniques that Dr Swindells has applied to specimens from the Mote of Mark. In another case, a shapeless piece of iron, when cut open and polished, was revealed as the billet of a sword, the piece of iron remaining after the sword blade had been fashioned.





Cast studs and reconstruction of a brooch excavated.

Collaboration between metallurgy and archaeology at Liverpool has been justified by the remarkable amount of information that Dr Swindells and his team have been able to deduce from a few fragments of material.

The electron-probe microanalyser used in conjunction with a special pulse processor which enables device developed by Harwell—a results to be read out directly—has been an essential research tool. It detects minute quantities of metals and gives a remarkably accurate assessment of the concentration present.

Dr Swindells and Dr Laing agree that the metalworkers of the Mote of Mark were highly sophisticated craftsmen turning out an entire range of metalwork from arms to domestic ware and decorations. These findings sustain the argument that the Mote was a major metalworking site in use over a substantial period.

Alan Cane

LETTERS TO THE EDITOR

Scunchester

from Mr Graham Stodd

Sir,—I write to you in more detail about one of the "Scunchesters" of the south coast.

Bishop Otter College (founded in 1839) is situated in Chichester; Bognor Regis College (founded after the last war) lies seven miles to the east. They are flanked to east and west by Southampton University (a red brick university), Sussex University (a plate glass university), and two of the new polytechnics at Portsmouth and Brighton.

The two colleges are slowly but surely moving towards some form of rationalized higher education presence in West Sussex, although the final shape has still to be decided, but what of their chances of eventual diversification?

On the one hand, the James report, the recent White Paper, and a recent OECD report on short-cycle higher education, all point to the need to bring teacher education out of isolation in monotechnic institutions, while on the other hand, your leading article highlights the problems raised by the new colleges of higher education competing for BA candidates.

I would suggest, however, that this competition may be more imaginary than real. Since 1967, 1,389 women students have entered this college together with several hundred men. Many of these women have already left, taught for a year or two, married and in many cases already have families. Some may eventually return to teaching, but for many their teaching career is already over.

It may be reasonable to suggest that the college has really provided them with a general higher education rather than training for a profession. It is not a cynical view to say that the colleges have had this hidden role of general higher education for at least the past 20 years.

Bognor Regis College and Bishop Otter College were offered the opportunity in the recent White Paper to make this latent function manifest by developing BA degree courses, which they proceeded to do, one with the CNAA, the other with the University of Sussex, obtaining validation last year. The colleges recruited in 1973 a total of some 1,400 students; the colleges are due to recruit by 1980 some 750 teacher training students.

Given that both colleges, situated as they are in the sunny south, had no difficulty in recruiting 1,400 students, Bishop Otter being described in a recent Church Board of Education report as one of the strongest recruiting colleges, it may be reasonable to suggest that they should be allowed to continue to tap their traditional reservoir of well-qualified applicants in developing diversified courses without in any sense entering into competition with the polytechnics and universities.

Yours faithfully,
GRAHAM STODD,
Bishop Otter College,
Chichester,
Sussex.

University finance

from Professor J. N. Wolfe

Sir,—I refer to the review by Charles Carter of Michael Pickford's book *University Expansion and Finance* (*THES*, October 31).

This is a fair and favourable review but seems to me to have some important shortcomings. While accepting Pickford's principle that economies of scale are available in universities, Mr Carter fails to draw the obvious implications. It follows from Pickford's principle that when growth in higher education resumes, the foundation of further new universities should be avoided in order to gain economies through the expansion of existing institutions.

Mr Carter is certainly correct in thinking that there is more scope for the application of Pickford's principle in an atmosphere of growth; but greater attention to achieving flexibility in staffing and accommodation would allow this principle to be applied even during less buoyant periods. An effort might be made even now, for example, to phase out some smaller institutions of higher education.

Yours sincerely,
J. N. WOLFE,
Professor of economics,
Edinburgh University.

Salaries, sabotage and civil servants

from Professor Donald Read

Sir,—Mr Hartnett's letter is a welcome sign that the role of the higher civil servants in the Department of Education and Science is now becoming a matter of public discussion (*THES*, November 14).

Mr Hartnett suggests that this discussion should range very wide. One aspect which certainly needs airing is the undesirable situation which has arisen as a result of increased government involvement in the control of wages and salaries.

It has been traditionally assumed that civil servants cannot be criticised because they cannot answer for themselves. In any case, it has been assumed that, whatever their advice to ministers may be, it has been given from a position of detachment. But in matters of the fixing of wages and salaries out of government funds is this now the case?

The civil servants who have been resisting pressure for increased university salaries—and been doing so face-to-face with university representatives—have themselves done very well out of recent civil service salary increases. They are saying "no", to university teachers after they have said "yes, please" for themselves. They are in the position of saying to university professors "yes, we at the top of our tree believe that we should now be paid much more out of government money than you at the top of yours".

There may be a good case for this; but interested parties should not be saying it in negotiations, even under the traditional thin pretence of being always and only the mouthpieces of ministers. The case is surely overwhelming for the removal of the whole question of university salaries to an independent standing review body, to which of course the Department of Education and Science would submit evidence.

A new situation in government has been produced by inflation and the incomes policy, and if civil servants still wish to work apart from personal criticism—which is certainly desirable—they should press for such a change. Otherwise, it will not only be ministers who find themselves open to direct personal attack in your columns and elsewhere.

Yours faithfully,
DONALD READ,
Professor of modern English history,
University of Kent,
Canterbury.

from Dr L. H. Palmier

Sir,—It is to be hoped that Mr Anthony Hartnett's call for academic sabotage will go unheeded (*THES*, November 14) since the only likely consequence is that we shall lose whatever public goodwill is left us.

As we can hold nobody to ransom, it is not such guerrilla actions as he suggests which will prevent our further impoverishment, but a change of the basic situation. And this is, quite simply, that at present salary levels the supply of applicants exceeds the demand.

Can we really say that there are academic vacancies unfilled because of the lack of qualified applicants? Is any university prepared to declare that it has appointed lecturers of inferior quality because of the low salaries offered? And, consequently, can any government, concerned to arrest inflation, accept that higher salaries are necessary for the profession?

What we are experiencing surely is the natural consequence of the great university expansion during the last two decades. It was entirely predictable that more aspirants for the academic profession would be produced than it could absorb. Hence, of course, an excess supply and a fall in price.

If the position is to be redressed, our most hopeful approach is to raise the qualifications for entry, so improving standards while reducing the supply. The scarcity of posts is already having the effect that some applicants for junior lectureships hold the PhD, and ironically enough, government policy is likely to make this a general requirement.

The Industrial Relations Act gives security of employment after two years. This can only mean that the probationary period for academic staff is effectively reduced to the same period, so that in practice the probationer's performance will have to be assessed on little more than a year's work.

While it may be just possible to guage his teaching ability in that time, it is absurd to think that the distinctive university qualification, namely research potential, will reveal itself so quickly. The evidence for it will have to be produced before appointment, and the recognized testimonial to this effect (though its predictive ability is perhaps no better than any other test), is the doctorate.

The profession would do itself only good by making the PhD a formal requirement for appointment to academic posts, in the same way that a good first degree is now.

The doctorate does also have the advantage that the thesis which earned it can be read, whereas the quality of the first degree has to be taken on trust. Sometimes this requires a certain suspension of disbelief.

Yours faithfully,
L. H. PALMIER,
School of Humanities and Social Sciences,
Bath University.

from Professor Ronald Meek

Sir,—What a pity that John Saville, in his otherwise excellent "Don's Diary" (*THES*, November 14), could not resist taking a side-swipe at professors. Their high average salary of £9,000 a year, he says, and even more important their "general conditions of work", make it remarkable that anyone should fail to appreciate "what a privileged elite professors still are". These are very emotive words. What is the reality?

I am a fairly typical provincial professor, whose gross salary, which for the last few years has been running at the £6,000-£7,500 level, has just been raised to a figure near the new average of about £9,000. I would not wish to deny that £9,000 is quite a lot of money, even today. When one takes account of the full effect of progressive income tax at present-day rates, however—to say nothing of a number of other less publicised income-equalising devices—it is not nearly as much as it sounds.

The difference between my net salary and that of, say, a lecturer at the top of the scale is surely not great enough to warrant my being classed, salary-wise, as a member of a "privileged elite". Nor is it the mark of a member of a privileged elite that his income should have declined in real terms to the extent that mine has over the past few years, at the same time as other comparable groups outside the universities have been able to maintain and even increase the real value of theirs.

But what about my "general conditions of work", which John Saville claims are even more important than my income in making me a member of a privileged elite? Try as I will, I cannot see any significant respect in which my general conditions of work differ from those of my non-professorial colleagues in the department where I am employed. I do roughly the same amount of teaching as they do, and shoulder roughly the same burden of departmental chores. (The Head of our department is not a professor, but a senior lecturer). I do the same amount of internal examining as they do; and it comes to applying for study leave or for permission to park my car on the campus. I share the available secretarial assistance with them, and have no special privileges when I want to get my research work typed.

It is true that I have a larger room than they do—but in these economy-ridden days it is just as cold and just as dimly-lit as theirs. I would not of course claim that this high degree of democracy is universal; but a very large number of the professors of my acquaintance, at Leicester and elsewhere, do find themselves today in a situation which is not essentially different from mine.

There is only one way in which I really feel myself to be privileged in my capacity as a professor: as an *ex officio* member of senate and some of its boards I have more opportunity to play a part in the running of the university than those of my non-professorial colleagues who have to stand for election to these bodies.

I do possess other important privileges, of course: I am sometimes able to make exciting visits to universities abroad; I am able, up to a point, to choose the time when I do my research work; and in my teaching I am continually stimulated by contact with young enquiring minds. But I enjoy these privileges not as a professor but as an academic, and I share them with my non-professorial colleagues.

There was, of course, a time when professors were much more privileged than they are today. But those days, where they have not already passed, are very rapidly passing. Those of us like John Saville and myself, who have consistently advocated the erosion of undue professorial privilege, have been successful beyond our wildest dreams. But does not John Saville sometimes share with me the niggling doubt that we have perhaps been *too* successful—that the process of erosion is now proceeding at such a rate that the future supply of professors may dry up, and that the very existence of our species may be threatened? I am immodest enough to feel that our extinction would be something of a pity. We are rather rare birds, after all, and we do do *some* service to the state.

Yours sincerely,
RONALD MEEK,
Professor of economics,
Leicester University.

Dr Hampson's details

from Dr William Taylor

Sir,—One of the few hopes left to those unexcited by political ideology and rhetoric is that the next government, of whatever colour, will do a better job for the universities than the present one.

Dr Keith Hampson, Conservative spokesman on post-school education, writes (*THES*, November 14) of the need to defend excellence, and for each institution to "be free to develop its own character and build a reputation based on its quality in its chosen field".

So far, so good. But he also advocates a national council with regional sub-committees, which across the whole field of higher, further and adult education would "sponsor *research and syllabus* coordination". If he believes that this is consistent with the maintenance of quality and freedom, and his backbench opinions are ever reflected in frontbench policies, then heaven help us.

Dr Hampson is no more encouraging when he tries to be a bit more specific. He charges that "some universities which are supposed to check the academic viability of the courses put up by the colleges have validated degree courses which are simply not up to par".

But this is not specific enough. Will Dr Hampson produce details of the courses to which he refers and the names of the universities and colleges concerned, together with the criteria that he has employed to arrive at this judgment?

Yours faithfully,
WILLIAM TAYLOR,
Director,
Institute of Education,
London University.

The place of theology

from Professor Ninian Smart

Sir,—Under the headline "Restore theology to central place in universities" you report on Professor Roy Niblett's stirring contribution in the recently published memorial volume for Dean Alan Richardson.

He makes the point that some of the most fashionable departments of theology are among those concentrating exclusively on phenomena that can be examined historically and sociologically. I doubt whether this is or was ever quite true.

The recent decade has seen a remarkable expansion of interest in philosophical and doctrinal explorations concerning religion. But these of course must go with a sensitive understanding of the facts of religion. For the ultimate justification of the study of religion and theology is that religious forces have been powerful in human life and thought (and still are, of course).

Whether this means that theology should be central in universities is doubtful. Theology (or more broadly, religious studies) should neither be the queen of the sciences nor the knave of arts.

Yours truly,
NINIAN SMART,
Professor of religious studies,
Lancaster University.

Nautical studies

from Captain G. R. Hughes

Sir,—The Horner cartoon (*THES*, November 14), might seem singularly appropriate in the context of the shortage of students in nautical studies courses and of the real need for graduates from these courses.

In times of high activity in international trade and therefore in shipping, we see the same phenomenon. The shipowner tries desperately to get his ships manned, and uses every conceivable device to this end. He may be driven to accept unqualified people and to discourage the qualified from attending courses of higher education with the inevitable result that shipping in a general sense finds itself short of the essential quota of highly qualified people it needs to remain healthy.

With a downturn in trade, the shipowner has fewer manning problems and more people are available to follow courses leading to higher qualifications. This is relevant to the increased intakes into nautical studies courses this year.

It is worth noting that almost all nautical students, on graduating, return to the shipping industry or to work related to it such as teaching. Very few students, if any, are now studying for the Extra Masters' Certificate, the highest professional qualification available to the seafarer, and one may wonder, since the industry needs a number of people with qualifications at this or degree level, if the low number represented by last year's intake, is much more than a minor disturbance in the general development of graduate qualifications for the industry.

When degrees in nautical studies were introduced in 1965, the view was held in shipping circles that about 100 graduates a year were needed, and as there are about 110,000 seafarers and a great many more people in the industries and commerce supporting shipping, this figure seems conservative. Shipping is a capital-intensive, highly technological and highly competitive industry in which operating risks are high (witness last week's events in the English Channel).

A figure of 100 graduates a year giving a national intake of, say, 150 annually, plus a quota of overseas students to give 140, seems reasonable for three or four courses in the United Kingdom. It should not be forgotten, however, that in the mouth, for example, the staff and equipment involved in the nautical studies courses are also involved in other related courses which are flourishing, such as the BSc (Fishery Science), Diploma in Hydrographic Surveying and Diploma in Management Studies (Shipping), and courses leading to professional qualifications.

The picture of nautical studies therefore, is not so bleak as would appear from your article, although the need to prevent proliferation of courses is obvious.

Yours faithfully,
G. R. HUGHES,
Assistant director,
Plymouth Polytechnic.

more letters, page 10

NOTICE BOARD

Chairs

Professor T. C. Barker, professor of economic and social history University of Kent has been appointed to the chair of economic history, London School of Economics from October 1, 1976.

Mr George Bentley, clinical reader at the Nuffield Department of Orthopaedic Surgery, University of Oxford, has been appointed to the chair of orthopaedic surgery.

Dr C. L. Berry, reader in pathology, Guy's Hospital Medical School has been appointed to the chair of morbid anatomy, London Hospital Medical College from October 1, 1976.

Dr I. Brownlie, fellow of Wadham College, Oxford, has been appointed to the chair of international law, London School of Economics from October 1, 1976.

Mr S. A. Heppie, fellow of Clare College, Cambridge, has been appointed to the new chair of comparative social and labour law from October 1, 1976.

Dr Norman Wright, senior lecturer in the department of veterinary pathology in the University of Glasgow Veterinary School, has been appointed to the university's new chair of veterinary anatomy.

Professor A. J. Zuckerman, professor of virology, London School of Hygiene and Tropical Medicine, has been appointed to the chair of microbiology, London School of Hygiene, from December 1, 1976.

Appointments

Universities

Bradford

Lecturers: C. R. P. Grand (French); F. E. Schallert (German); E. Berkenbusch, J. E. Laredo, G. Pearson (sociology); J. M. Parkinson (finance); Dr R. J. Preston (civil engineering); R. C. Lindley (philosophy); Dr J. E. Vargharanon (European history); M. Macey (education). Senior research fellow: Dr D. H. R. Price (systems dynamics). Research fellow: R. Axelsson (organizational analysis research unit); C. J. B. Hitch (environmental sciences). Assistant engineering librarian: M. Fleming. Honorary senior research fellow: Dr C. G. J. Baker (powder technology). Honorary visiting fellows: Professor C. R. Salanctik (organizational analysis); N. Hart (communication studies); J. E. Raiswell (systems dynamics). Honorary visiting lecturers: Dr A. F. Cox (medical and surgical sciences); Dr P. H. Rack, A. MacGregor, J. Spriggs, R. A. Hall (archaeological sciences).

Durham

Lecturers: T. Cannon (marketing); J. T. Gleaves (botany); H. Beynon (sociology); M. M. Stone (education). Temporary lecturers: C. H. Grigg (engineering science); I. Lambert (music). Senior visiting fellow (Prnscience): Zakrzewski (physics). Research fellows: L. Collins (chemistry); R. J. Minns (engineering science); P. L. Simmons, M. A. Lyons (arts). Resident tutor: N. Martin (part-time lecturer in mathematics).

London

Director: Dr J. A. Allen (University Marine Biological Station).

Swansea

Lecturers: P. C. Raynor (social administration); K. Morgan, R. D. Wood (civil engineering). Assistant accountants: S. A. Allen (bursars division); A. M. Reppell (bursars division). Assistant librarian: Susan M. Costin (readers' services).

York

Assistant librarian: R. M. Ryan (J. S. Morrell Library). Assistant finance officer: F. Sherlock (bursar's department).

General

T. Rees has been appointed director of the Runnymede Trust.

News

The new BP Centre has been established at Thorp Arch Industrial Estate, Wetherby, West Yorkshire. It is devoted entirely to BP Educational Service activities. Catalogues detailing the current range of BP's educational products are available free from: BP Educational Service, PO Box 5, Wetherby, West Yorkshire LS23 7EH.

* * *

The Duke of Edinburgh has accepted an invitation to become patron of The Royal Veterinary College, University of London.

Noticeboard is compiled by Patricia Santinelli and Myrna Monsurate

Recent publications

The Open University's new releases catalogue for summer 1975 for 16mm films, video cassettes, audio tapes is now available from the Audio-Visual Sales Office, Marketing Division, PO Box 81, Walton Hall, Milton Keynes, MK7 6AA.

* * *

Five catalogues on arts, mathematics, science, social sciences and technology giving full details of all Open University films have recently been published by Guild Sound & Vision Ltd, the sole distributors of the OU Film Library. They are available free of charge from Woodstone House, Oundle Road, Peterborough PE2 9PZ.

* * *

Management Science at Imperial College, the First 20 Years, is a brochure describing the work carried out in this field at the college since 1955. It is available from the Assistant Director, Department of Management Science, Imperial College, Exhibition Road, London SW7 2BX.

* * *

"The Further Education College as a Predictable Organization: a power dependency analysis" by C. M. Turner and "Advanced Course for teachers: a success story" by Norman Haycocks are some of the articles in *Educational Studies* Vol 1 No 3 October, 1975. It is available from the Carfax Publishing Co, Haddon House, Dorchester on Thames, Oxford OX9 8JZ.

Course news

"The Community Land Legislation including Development Land Tax Proposals", a series of one-day courses organized in association with the Royal Institute of Chartered Surveyors, will examine the form of the development process under the Community Land legislation. Details from Mrs P. Kinder, Centre for Advanced Land Use Studies, College of Estate Management, Reading University, Whiteknights, Reading RG6 2AW.

* * *

"Student Selection and Recruitment", is a short course for academics and administrators involved in student selection. It will be held from December 15-19 at the School of Oriental and African Studies, Malet Street, London WC1. Fee: £26. Application forms from Gwen Heath, UTMU, 55 Gordon Square, London WC1H 0NT.

* * *

A new Higher National Certificate course in material studies, believed to be the first in the country, has been launched by Hatfield Polytechnic.

The wide-ranging course covers the selection, manufacture, processing and development of all kinds of materials.

Part-time study, on a one day and evening basis per week, includes extensive laboratory techniques and test procedures.

Awards

Nine postgraduate studentships have been awarded for up to two years by the Department of Agriculture and Fisheries for Scotland tenable from October 1975 to the following: Agricultural science: D. B. Nayamith, Aberdeen University; W. J. Oswald, Imperial College of Science and Technology; L. Torrance, Dundee University; A. D. Watt, East Anglia University. Animal husbandry: J. S. Chalmers, Glasgow University. Agricultural marketing: A. P. Dellaquagilin, Wye College. Agricultural engineering: I. Gray, National College of Agricultural Engineering, Silsoe. Agricultural Extension: N. D. Ford, Reading University. Agricultural economics: R. G. Duveupoet, Edinburgh University.

Institution of Structural Engineers

Graham Wood prize: R. W. Lawrence (structural steelwork); A. E. Wynn prize: G. A. Clifton (structural concrete); Andrews-Kent prize: A. Gordon (structural design); Husband prize: J. Redman; Denis Matthews prize: A. B. Dencley.

University College, North Wales

John F. Danby memorial prize: R. Crick, P. Kirk, S. Harnett, D. Higgs, P. O'Connor, C. Gibbons and D. Jackson.

Grants

Universities

Warwick

Mathematics—Professor R. W. Carter—£3,881 from the SRC to support the visit of Professor H. S. Coxeter (University of Toronto) as senior visiting fellow.

Molecular Sciences—Dr B. T. Golding—£17,718 from the SRC for research on aspects of the metabolism of methyne groups; Dr D. E. Griffiths—£6,666 (supplementary) from the SRC for research on mechanism of resistance to organotins and other biocides in microorganisms. Professor K. R. Jennings—£6,850 from the SRC for research on fundamental studies of relevance to negative ion-chemical ionisation mass spectrometry; Dr P. Moore—£8,250 (supplementary) from the SRC for research on low temperature stopped flow.

Physics—Dr D. P. Woodruff—£12,603 (supplementary) from the SRC for research on scanning auger electron microscopy of surfaces.

Sociology—Mr R. Fryer—£21,186 from the SSRC for research on organization, participation and structural reform in the National Union of Public Employees.

Environmental Sciences—£20,695 from the NERC for research on environmental microbiology, growth physiology of thiobacilli metabolizing iron, sulphur and nitrogen compounds, under the direction of Professor D. P. Kelly.

Post Experience Courses for Teachers in Further and Higher Education

1. UNIVERSITY OF MANCHESTER DIPLOMA IN ADVANCED STUDY IN TECHNICAL EDUCATION

Applications are invited for full-time and part-time versions of courses commencing in September, 1976, which will respect the following themes:

(a) RESEARCH
A study of the methodology involved in the design, implementation and analysis of research investigations in further and higher education.

(b) EDUCATIONAL MEASUREMENT
A study of the theory of measurement as applied to the development and use of measuring instruments appropriate to the functions of teachers, counsellors and administrators.

(c) EDUCATION MANAGEMENT/ADMINISTRATION
An analysis of management and administrative theory applied to current problems in further and higher education.

(d) COMPARATIVE EDUCATION
An approach to the application of comparative methodology and cross-national data to the analysis of current problems in further and higher education.

2. UNIVERSITY OF MANCHESTER DEGREE OF BEd WITH HONOURS IN EDUCATION

Applications are invited for the one-year part-time preliminary courses commencing in (i) January 1976, and (ii) September 1976. Studies at this level provide a comprehensive grounding in (a) Philosophy (b) Sociology and (c) Psychology as they apply to educational processes, and (d) Contemporary Educational Institutions.

Candidates who are successful on the Preliminary Course may proceed to a one-year full-time or two-year part-time BEd (Hons) course. Options available at this level include Curriculum Studies, Further and Technical Education, Audio-Visual Communications, Philosophy, Sociology and Psychology.

3. UNIVERSITY OF MANCHESTER CERTIFICATE IN EDUCATIONAL STUDIES

Applications are invited for one or more of the part-time twenty-hour *MODULAR COURSES* being offered each term and commencing January 1976. A wide range of options is available. The pattern of attendance is very flexible and teachers may attend several modules in one term or, alternatively, attend on an occasional basis.

FURTHER PARTICULARS FROM: The Director, Bolton College of Education (Technical), Chadwick Street, BOLTON BL2 1JW.

Dundee College of Education

A one-year full-time course leading to the award of a

Diploma in Educational Technology

is offered, beginning in session 1976-77.

The course is designed for those engaged in curriculum development throughout all levels of education and training. The accent will be on curriculum analysis and design, and the management of innovation. All participants will be assisted with both the theoretical and practical aspects of the production of curriculum materials. Whilst it is proposed that a small number of production exercises will be mandatory, participants who have specific assignments to fulfil will be welcome.

The new College building offers unrivalled facilities for the study of all facets of the implementation of educational technology throughout an institution; for the use of a high level technical installation for study and information retrieval purposes; and for involvement in the design, production and use of individualised learning materials.

Applications are now invited for the session 1976-77. For further details and application forms apply to:

The Assistant Principal, Dundee College of Education, Gardyne Road, Broughty Ferry, Dundee, DD5 1NY.

Padgate College of Higher Education

MEDIA AND COMMUNICATION
RECREATION AND THE ENVIRONMENT
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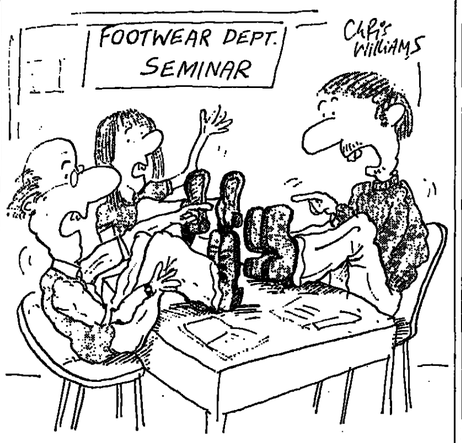
Now vocationally orientated courses, leading to the Diploma of Higher Education or B.A. degree of the University of Manchester will commence in September, 1976.

The courses are intended for students who wish to develop careers in the media industries; in recreational and environmental development; in the tourist industry, or foreign departments of commercial or public enterprises.

Further details may be obtained from:
The Admissions Tutor,
Padgate College of Higher Education,
Fearnhead, Warrington, WA2 0DB.
write, telephone or visit. (0925-33571)

ACADEMIC DEVELOPMENTS

Shoe design placed on a practical footing



Leicester Polytechnic is opening a design centre for the footwear and leather industries, in conjunction with the Footwear, Leather, Fur-Skin Training Board. As well as pumping new blood into the design industry by retraining and updating knowledge, it will act as a stimulus for the polytechnic's BA honours course in footwear design.

Mr Ben Cooke, assistant director in art and design, said: "We aim to make this centre a dynamic force in an industry which is suffering from demoralization. The British leather industry has tended to look elsewhere for its design and in losing design initiative, has lost sales."

The centre, which is financed by the training board up to £25,000 a year for the first three years, is hoped eventually to be half-financing. Companies will pay for the courses their employees attend and the centre will provide a consultancy service.

By Christmas, between 20 and 25 students will start on short courses in, for instance, design methods for a European market, innovation and change in the design industries, pattern cuttings and design techniques. In a year's time there will be longer full-time courses on similar topics.

The centre will draw its expertise from the whole polytechnic, including the faculties of business studies, law and social science, but obviously mostly from the faculty of design and visual arts.

The BA honours course in fashion with special emphasis on footwear design has already been run by the department for three years. About 60 students each year start the course in fashion, and about 10 then go on to specialize in footwear design.

The footwear design course stems from the School of Boots and Shoes which went in with a college of further education when the polytechnic was designated. The polytechnic's school of fashion retained an interest in the subject and created a diploma course, which was later to be converted to a degree.

The course is not entirely practically based. "Like all our BA degrees, it has an academic bite", Mr Cooke said. "Between 20 and 25 per cent of a student's work is academic, they study the history of the subject and a modern language."

The footwear design industry has come to know the course—one of the few in Europe—and are happy to accept graduates straight from it. Alternatively, they could take an MA in fashion with footwear design as the special subject.

How to cope with noise

The Polytechnic of the South Bank's new part-time MSc course in environmental acoustics is intended primarily for environmental engineers, although it will also be of interest to those in other fields, since it covers a large area of acoustics.

Graduates from the course will be acoustical engineers, who are capable of isolating existing or future noise problems, but also of designing the specific means of overcoming them. They will be equipped to deal with the acoustics of architectural design, and will have, in addition to their practical training, a fundamental understanding of the physical and subjective aspects of acoustics.

The course is of two years' duration, and involves daytime and evening attendance at the polytechnic for one day a week. The first four terms consist of a course of lectures and tutorials, and the fifth and sixth terms are devoted to a research or design project.

The course runs from January to December of the following year. There is a preliminary course in acoustics and mathematics, for those without prior knowledge of acoustics. This is an evening course, run in the preceding autumn term.

The syllabus includes sections on subjective acoustics, acoustic theory, acoustic measurement, engineering acoustics and laboratory work.

A syllabus in mathematics is part of the course and this is intended to complement the parts of the syllabus on acoustic theory and data processing.

The entry qualifications are one or more of the following: a degree in engineering or science, a pass in CSI Parts One and Two in appropriate subjects, a pass in the graduateship examinations of the Institute of Physics; a Certificate in Engineering, or a Higher National Diploma in appropriate subjects, if accompanied by substantial relevant experience.

CHELSEA COLLEGE OF PHYSICAL EDUCATION
(to become part of East Sussex College of Higher Education in September, 1976)
EASTBOURNE, SUSSEX BN20 7SR

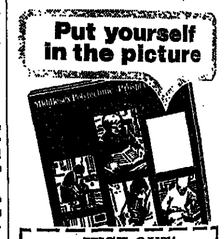
Short Courses 1975/76

(I) Physical Education for Teachers of Mentally Handicapped Children
16 February to 23 March, 1976
This five-week course is intended for head and assistant teachers in schools for mentally sub-normal and educationally sub-normal children and is designed to demonstrate ways in which movement may be used to help pupils in their learning of basic concepts.

(II) Science of Movement
21 April to 3 July, 1976
This term's course is intended for qualified teachers and college lecturers. It will also be relevant to the needs of professional coaches interested in modern approaches to sports training.

(III) International Workshop
3 June to 1 July, 1976
This four-week period of intensive study is intended primarily for overseas teachers and lecturers requiring an introduction to the concepts underlying movement education in Britain.

Application forms and further details obtainable from the Principal's Secretary, Chelsea College of Physical Education, Hillbrow, Denton Road, Eastbourne, Sussex BN20 7SR.



JUST OUT!
Middlesex Polytechnic 1976-77 Prospectus
Send for yours today
Admissions Office, Middlesex Polytechnic, 82-88 Church Street, Edmonton, London N9 9PD or telephone 01-805 0692
Name
Address
C103A

CHELSEA COLLEGE OF PHYSICAL EDUCATION
(To become part of East Sussex College of Higher Education in September, 1976)
EASTBOURNE, SUSSEX BN20 7SR

Applications are invited for admission to: A ONE YEAR SUPPLEMENTARY COURSE open to qualified men and women teachers who wish to specialise in Physical Education for pupils in the 11 to 18 years age range. It is possible for teachers interested in work with children with special needs to take an option within the Supplementary Course which will equip them to teach ADAPTED FORMS OF PHYSICAL EDUCATION.
Application forms and further details may be obtained from the Records Officer, Chelsea College of Physical Education, Hillbrow, Denton Road, Eastbourne, Sussex BN20 7SR.

Dumfries and Galloway Regional Council
EDUCATION DEPARTMENT

Proposed SCOTTISH HIGHER NATIONAL DIPLOMA COURSES at DUMFRIES TECHNICAL COLLEGE beginning AUGUST, 1976.
Duration: Two years full-time.
Areas of Study:
SECRETARIAL STUDIES
SECRETARIAL STUDIES (with Languages)
ACCOUNTING
Enquiries should be made to: The Principal, Dumfries Technical College, Heathhall, Dumfries DG1 3QZ. Telephone No. (0387) Dumfries 61201/6.

ACADEMIC DEVELOPMENTS

Answer lies in the home

by Frances Gibb

The new social work course at Huddersfield Polytechnic which leads to a Certificate in Social Work is unusual in two respects.

First, it caters for that category of learner who would find it hardest to obtain a place on other social work courses: adults, particularly single unsupported women with children, those with no educational qualifications and those with no previous knowledge of social work wanting a change of career.

Second, it is based on a four-term year, with placements in situations not usually associated with traditional social work. Students will work as home helps, helpers in play groups and in welfare centres.

We are saying that domiciliary care and residential work are all part of social work as well as the traditional field work, Mrs Eileen Moxon, the course leader, explained.

The philosophy behind the course, although gaining popularity, is still comparatively rare. "Most courses are orientated to one sort of social work such as group work. We are saying that there are common skills, whether a student wants to be a youth leader, a home help or residential worker. We've moved away from the psychoanalytic base of many social work courses."

Mrs Elizabeth Bertolla, one of the tutors, said: "Usual courses employ one teaching method, and are based on the psychoanalytic method of working through the relationship; the case-work model. In ours, we are concentrating on the management of resources; on the social worker as resource agent for the client. We are not throwing out the relationship aspect, but adding the self-determination of the client."

The emphasis therefore is very much on practice. The course aims for much closer links between theory and practice on the one hand, and between different methods of practice on the other. "We want people who can do the job of social work and not just be students", Mrs Moxon said.

Another tutor, Mr Philip Makin, added: "Students will have a broad view. They will know which skills to apply in a particular situation and fit the method to the problem, rather than the other way round."

The course is now nearing the end of its first term so students have had a chance to take stock of it. Partly because of the degree of selection involved (some 35 have been chosen from 850 applications and 1,000 initial inquiries), they are very keen and highly motivated; one student travels a total of 100 miles each day to attend, and there has been no drop-out.

Reasons for applying were varied. Boredom with a job or career was a popular motive; others more actively wanted a change of career and some had started training in social work. Others were divorced or widowed and wanted to occupy their time and find a new interest.

The task of selection was mammoth. Out of the 350 applicants, 126 were selected for further testing on the basis of an essay. Of these 42 per cent of the men and 40 per cent of the women had left school by 16. Only one in five had stayed at school after 16.

The next tests took the form of written intelligence tests and interviews. Generally the applicants were found to score higher than the general population but not as high as university students, according to comparative figures supplied by the test publishers.

Of the 35 selected, men and women were equally represented. Their backgrounds varied greatly. Although 60 per cent of previous jobs were quoted as being in the "caring" professions, many students were only trainees or recent entrants. Occupations included salesman, medical photographer, secretary, plumber, nurse, warrant officer in the forces, warehouseman, home-help organizer.

Most are now coping with the problem of fitting study in with home life, and as the course progresses they are finding that it takes less of their spare time. Some are wondering, however, how they will manage the block placements; so far the practical side has taken the form of one day a week.

Students generally have found the academic side of the course harder than expected, and wanted less time spent on the practical in order to give more opportunity to reading. Because of family commitments they have less time than younger students. They also have high expectations of what is wanted from them.

The course is intense. Each day there are both lectures and seminars, and a wide range of subjects covered: law, human growth and behaviour, social work, social policy, sociology and psychology. Students find the seminars the most stimulating part and now that the course is in its stride they are more confident of speaking up, both in these and in lectures.

Having adults as students also brings problems for the tutors. Mrs Bertolla, whose background is the social work profession—although she has taught undergraduates—said: "One feels under more scrutiny as a person; there is not the distance that there is with undergraduates. That produces the strain, rather than the amount of work, but when you get a response it is far more satisfying."

Care was taken to introduce students carefully to academic work, and an introduction course was held on the use of libraries, books and note-taking and study techniques.

The practical side has also brought its problems. Some students objected initially to the idea of acting as home helps—"we didn't come to do other people's housework"—but can now see the value of it and have become involved with the personal situations they each are dealing with.

"We want to encourage them to see simple tasks and skills as an essential part of the helping process and as more crucial than sophisticated skills", Mrs Moxon said.

Although the first year of the course is broadbased, in the second year students specialize in their particular area of interest, such as family and small group work, or work with individuals. It is hoped also to offer second-year options in community work and domiciliary support work.

Students are from the start of the course attached to one of four areas: probation work, social services, education and welfare and domiciliary care. The practical work is closely linked with the academic, in that each student is allotted to a tutor who in turn liaises with the agency involved in organizing those particular placements. In that way there is continuous feed-back.

All the signs are that the course will be a great success. Already selection is starting for next September. It is hoped numbers will be expanded to 50, although some places will be taken by students who were unable to get in this year.

Nor should there be any problem about students obtaining jobs, even for those on grants. Demand is great, and the majority is already seconded either by the Home Office, or by the local authority, and so will have jobs automatically.

What is now needed, according to the students, is more courses specifically geared to the needs of the unqualified and mature entrant; and there are signs of movement in this direction. The Central Council for the Education and Training of Social Workers is developing a scheme which by operating on a modular basis, will enable students to study part-time and build up courses at their own speed.

Bullock call answered

The Bullock report on literacy called strongly for the training of more teachers in language skills. It urged the appointment of language consultants in schools and better training of teachers to raise reading standards.

Anticipating these demands, the school of education at Bristol University has set up a special option within its Master of Education degree for trained and experienced teachers in "language and learning".

From next year, students will be able to do research and course work to equip them with a fuller understanding of language in education.

The course will be open only to properly qualified teachers and will involve a dissertation and some field work.

The course planners say: "In addition to studying related aspects of linguistic theory and of the psychology of human learning, students will explore the role of language in education including the development of language abilities and teachers' use of and attitude to language.

"Students will also be given some experience of carrying out research in this field in the context of a large-scale investigation funded by the Social Science Research Council, into the development of spoken and written language skills at home and at school.

"Students who satisfactorily complete the course will have acquired an understanding of the theoretical and empirical foundations of current work in language development."

The classical connexion

Three new degree courses are to be introduced at Newcastle upon Tyne University in October, 1976.

The Faculty of Arts is to offer two new BA Joint Honours degrees: one in English literature and Latin, and the other in English literature and Greek. Both courses include study of the connexions between English and Classical literature and allow the student considerable flexibility in the choice of options.

A new BSc Single Honours course in surveying science will be introduced which will permit study in more depth than is possible in the case of the existing joint honours degree which involves the study of a second subject.

New areas of study additional to the existing joint honours syllabus include advanced geodesy and photogrammetry, positional astronomy, offshore surveying, advanced cartography, law of property and aspects of land planning and survey management.

Race finds a place

A course in race and community relations has been approved by Bradford University senate and will be introduced at the university this autumn.

Initially leading to a diploma either by one year's full-time study or two years' part-time study, the course is open to graduates with three years' experience in a relevant field or non-graduates with appropriate training.

An MSc degree may be obtained after completion of the course and the submission of a dissertation.

WALL HALL COLLEGE OF EDUCATION

ALDENHAM, HERTFORDSHIRE

Applications are invited for the following courses:—

1. DIPLOMA IN EARLY CHILDHOOD EDUCATION

This one-year full-time course is principally concerned with the psychology of early childhood, including child development, and the philosophical analysis of concepts associated with the education of young children. It offers an opportunity to study the latest research findings and take part in the important theoretical debates occurring within these areas.

The course will appeal particularly to teachers of children below the age of seven who wish to bring themselves up to date with new curriculum ideas and developments. It is suited also to teachers who may contemplate moving into work with younger children from other areas of Education, and to teachers wishing to proceed to Headships or Advisory posts.

2. CERTIFICATE IN THE EDUCATION OF DEAF AND PARTIALLY HEARING CHILDREN

A one-year full-time course open to qualified teachers, normally with a minimum of three years' teaching experience (but consideration will be given to others not fulfilling this requirement). The course covers theoretical and practical aspects, with extensive experience in schools throughout. Many visits are arranged.

3. TEACHING IN THE MULTI-CULTURAL SCHOOL

A one-term full-time course (Spring Term, 1977) for experienced teachers. Approaches adopted include seminars, lectures, tutorials, individual study and practical workshop sessions, supported by a range of appropriate visits.

All courses are under the auspices of the Cambridge Institute of Education and are recognized by the D.E.S. for secondment. Application should be made as soon as possible to the Principal, Wall Hall College, Aldenham, Watford, who can provide further information.

Dundee College of Education

DIPLOMA IN ADVANCED STUDIES IN EDUCATION

The college invites application from teachers, lecturers, advisers and community educators having not less than three year's teaching experience for the one year full-time course leading to the Diploma in Advanced Studies in Education commencing in October, 1976. The course is designed to give in-depth study and practice in one of the following fields:—

1. Guidance and Counselling
2. Curriculum Development
3. Organization and Management
4. Community Education and Leisure

In addition a common element course in Educational Studies is taken by all course members.

Full details and application forms can be obtained from:
The Assistant Principal (In Service), Dundee College of Education, Gardyne Road, Broughty Ferry, Dundee, DD5 1NY.

Eastbourne College of Education

(EAST SUSSEX COLLEGE OF HIGHER EDUCATION)

The following courses are offered at the College which is to merge with Chelsea College of Physical Education and Seaford College of Education to form a new College of Higher Education:

New B.A. Degree Courses. ENGLISH (major) with an associated minor in Art, History or Music.

HISTORY (major) with an associated minor in Art or English.
EUROPEAN STUDIES (French), courses in French, Geography and History.
It is expected that other major and minor studies will also be offered from September, 1976. Further details of these new courses will shortly be available.

B.Ed. and Certificate in Education. Main study areas offered are: Art, English, French, Geography, History, Mathematics, Music, Natural Sciences and Religious Studies.

Postgraduate Certificate in Education. A one-year course for graduates and those with graduate equivalent qualifications who wish to train as specialist Secondary School Teachers of French, Mathematics or Physics.

The Education of Handicapped Children. The College offers a one-year full-time supplementary course leading to the Sussex Certificate in the Education of Handicapped Children.

Eastbourne College of Education is a constituent College of the University of Sussex School of Education. The degrees are validated by the University. Students who complete satisfactorily two years of the three-year course may be awarded a Diploma in Higher Education.

The College is within a few minutes' walk of the sea in a very pleasant area at the foot of the South Downs. As a major resort Eastbourne has excellent social and cultural facilities, and both London and Brighton are easily accessible.
Enquiries about the degree courses and future developments should be addressed to the Principal (EWG), Eastbourne College of Education, Darley Road, Eastbourne, East Sussex, BN20 7UN.

East Sussex

ACADEMIC DEVELOPMENTS

Bridging gap between maths and sciences

by David Dickson
Science Correspondent

An attempt to bridge the gap between mathematicians and applied scientists is being made by a new degree course in engineering mathematics offered by Bristol University from October, 1977.

The committee has recently emphasized that much more could be done to interest mathematicians in work relevant to important engineering and technological areas, and to relate developments in mathematics with the needs of engineering and technology.

Students on the Bristol course will study both modern mathematics and a selection of engineering science courses. The aim of the course is to produce an engineering mathematician with a broad background and a particular skill in applying mathematics to the solution of engineering and management problems.

"The traditionally-trained mathematician studies no engineering during his undergraduate course, has done little, if any, laboratory work, and is unaware of the industrial use of—and need for—mathematics. Such a training makes it difficult for him to take his place in industry as a partner with the engineer", explains Professor Alan Milne, of the university's department of engineering mathematics.

"An engineering mathematics graduate, however, will have a training which is both theoretical and practical. The theoretical aspect will be a blend of engineering topics and mathematics, with the overall emphasis on the latter and its particular relevance to problems in engineering, while appropriate laboratory classes will make a student familiar with the realities of engineering."

In the first two years of the course, students will study a range of topics selected from engineering and mathematics, the first year being common with the engineering degree course.

In the final year, they will be expected to specialize either in systems and operational research—the mathematics of organizations—or in what the department refers to as continuum mathematics—the "mathematics of hardware".

Subjects covered by those specializing in systems and operational research include optimal control, information and communication theory, and operational research and mathematical programming. Alternatively, it will be possible to take courses in applied functional analysis, field theory and waves, and continuum mathematics.

In addition, students will undertake a mathematics project supervised by a member of staff of the department, which will account for 20 per cent of the total marks in the assessment of the class of degree of a student.

"From the point of view of the engineering faculty, this is a generalist degree, and students who take it should be able to tackle a diversity of problems by applying analytical thinking", according to Professor Milne.

72 join Bingley diploma

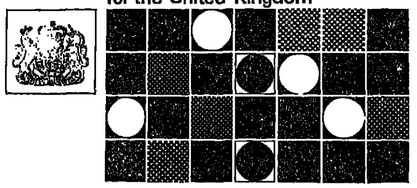
Bingley College of Education has enrolled 72 students on its University of Bradford validated diploma of higher education, which can be taken as a qualification in its own right, as a step to a bachelor of education degree or a bachelor of arts degree.

Better communication

The South-West London College has introduced a series of four short self-contained courses entitled "Being Human". The courses are designed to improve understanding and communication between people in work situations.

Government Statistical Service

BASIC EDUCATION STATISTICS SEPTEMBER 1975 for the United Kingdom



	1967	1972	1973
FURTHER EDUCATION (thousands)			
Number of students:			
full-time and sandwich	250.4	342.0	340.8
part-time day	817.4	788.9	786.6
evening	2,306.3	2,416.4	2,572.6
total	3,374.1	3,547.3	3,700.0
Qualifications obtained			
Advanced courses:			
First and higher degrees	7.3	9.9	10.1
of which:			
CNAA(1)	0.5	5.3	6.4
Higher National Diploma	3.2	7.6	7.7
Higher National Certificate	15.5	14.1	14.0
Non-advanced courses:			
Ordinary National Diploma	3.0	6.3	6.3
Ordinary National Certificate	22.2	22.2	22.3
TEACHERS (thousands)(2)			
Full-time teachers in all grant-aided schools and establishments			
men	197.5	241.5	251.5
women	221.2	281.3	296.2
Part-time teachers in public sector schools:			
men	4.8	6.4	6.5
women	36.5	43.7	47.9
Teachers on initial training courses:			
men	31.8	41.4	39.8
women	81.3	94.8	93.7
UNIVERSITIES (thousands)			
Number of students:			
undergraduate full-time	169.6	199.9	203.6
postgraduate full-time	35.6	46.9	47.6
total	205.2	246.8	251.2
of which:			
from overseas	15.4	22.0	24.9
undergraduate part-time	4.6	3.4	3.5
postgraduate part-time	14.3	20.1	20.9
Full-time teaching staff	23.8	30.7	31.5
EDUCATION BEYOND COMPULSORY SCHOOL LEAVING AGE (thousands)			
Full-time and sandwich students(3)			
In schools (aged 15-19)	n.a.	1,065.0	1,108.6
further education (aged 15 and over)	n.a.	312.1	312.0
colleges of education (aged 18 and over)	n.a.	128.3	127.2
universities (aged 17 and over)	n.a.	242.6	246.8
total	n.a.	1,748.0	1 824.6
STUDENTS AWARDS (numbers)			
New full-value awards awarded by:			
Local education authorities	90,065	104,350	103,975
Education Departments	10,367	13,634	14,670
Research Councils (Great Britain)	4,290	6,965	6,833
EDUCATIONAL BUILDING			
Projects started (£ thousands)	221,250	342,475	357,803
of which:			
schools	169,299	300,497	307,338
Completions	169,589	236,028	306,418
New school places provided (000's)			
primary	225.8	263.4	267.1
secondary	146.2	205.3	252.4
FINANCE (£ million)(4)			
Educational expenditure schools:			
nursery	4.6	9.0	11.4
primary	436.0	761.8	907.1
secondary	514.4	908.4	1,091.2
special	36.3	81.7	99.2
further and adult education	205.4	377.3	438.9
training of teachers (tuition)	42.6	79.8	90.1
universities	232.5	359.7(8)	431.6
other education	62.6	112.4	136.2
total	1,536.3	2,690.1	3,205.6
Related expenditure	284.0	424.6	488.3
Total education	1,820.3	3,114.7	3,693.8
of which:			
current expenditure	1,510.2	2,617.6	3,104.6
capital (from revenue and loans)	310.1	497.1	589.2

(1) The school leaving age was raised to 16 from September 1, 1972. (2) Figures take account of the full-time equivalent of part-time teachers (3) Revised. (4) Council for National Academic Awards. (5) The figures for England and Wales and Northern Ireland relate to March 31, for Scotland the date is December. (6) Age at December 31. (7) Financial years 1966-67, 1971-72 and 1972-73. (8) Including grants to the Open University.

Further copies of this card can be obtained from the Department of Education and Science, Statistics Branch, Elizabeth House, 01-928 9222 ext 2776.

Additional information on statistics for the United Kingdom is contained in "Education Statistics for the United Kingdom 1973".

Other volumes in a statistical series produced by the Department of Education and Science are:

Volume 1 Schools (England and Wales)
Volume 2 School leavers CSE and GCE (England and Wales)
Volume 3 Further Education (England and Wales)
Volume 4 Teachers (England and Wales)
Volume 5 Finance and Awards (England and Wales)
Volume 6 Universities (United Kingdom

also

"Scottish Educational Statistics" produced by the Scottish Education Department.

"Northern Ireland Education Statistics" produced by the Northern Ireland Department of Education.

Copies of these priced publications are obtainable from HMSO Government Bookshops.

The statistics published above are contained on a pocket-sized card issued free by the Department of Education and Science. They are part of a series summarizing statistics on schools, school-leavers, further education, teachers, finance and awards, and universities.

The card on basic education also includes details of the number of pupils, the number of schools, pupil/teacher ratios and pupils leaving schools, but these have been omitted.

The cards are available from the Statistics Branch, DES, Elizabeth House, York Road, London SE1. The *THES* will be publishing in full next month the card on further education statistics.

Millennium reaches China and 59 others

Among the richness of college life are the opportunities to sample the diversity of activities offered and to taste a little from the infinite variety of cultures, creeds, politics and philosophies.

Often it is from this non-teaching side that the student learns the most. But when the teaching and non-teaching aspects merge, the gain to the student may be even greater.

One such case is *Millennium*, a journal of international studies published by the London School of Economics. Unlike most academic journals, however, it is entirely managed and edited by the students of the school, although it does have an advisory board of academics.

The tradition of international study at LSE is a long and prestigious one, in an academic field which is comparatively new. It has the oldest international relations department in the country, which has a profound influence on thinking in the subject, and whose graduates engage in research which sometimes has great value.

It was felt that much of the work being done by graduates should be published, but often fell victim to the traditional "Catch-22"—if you have not had anything published already then it is difficult to get work considered. To fill this gap, and to provide a forum in which graduates could get their research work published, *Millennium* was founded.

At first its circulation was confined to little more than the international relations department itself. Its printing quality was poor because it was stencilled on the school's duplicator and it was difficult to finance.

Nevertheless, its academic qualities were recognized and gradually subscriptions began to come in not only from other British international relations departments, like Sussex, but also from the United States, Canada and Australia.

Now the journal is printed commercially and is published four times a year. Publishing companies now take regular space, and subscriptions assure it a stable future. It has received its first subscription from China and now circulates in some 60 countries.

In the past three years there have been two post-graduate editors and one undergraduate. Together with an editorial board of about 12 members they have worked hard to raise editorial standards to the level at which the journal has gained international recognition.

It has partly resulted from a deliberate policy to go for "big names" such as Joseph Luns, Secretary General of NATO, Norman Kirk, the late Prime Minister of New Zealand, Lord Home, former Prime Minister and Foreign Secretary, Lord Feather, former general secretary of the TUC, and Senator Edward Kennedy.

At the same time, however, this detracted from the original purpose of the journal, which was to publish the work of students. The present editor, Barbara Allen Robertson, now appears to be steering a middle course on this issue, mixing new work with contributions from more recognizable names.

Former editor Colin Hollis recognized the problem. He said: "We have to get 'big names' to contribute in order to attract readers and to get the journal established. But we are obviously careful to preserve some sort of balance." It was Hollis, together with postgraduate Jeffrey Golden, who really got the journal recognized in academic circles and who gave it the reputation which it now has, so that it can now afford to publish more work by students.

Although, in this case, the journal received support both from the staff of the international relations department and the school itself, it is this sort of project which often languishes for lack of finances or any dynamic impetus. But it is just this sort of project which should be encouraged, as it is one of the few points at which the academic life touches on the social.

Jeremy Cliff

The author is an undergraduate at the London School of Economics.

East or West, home is (probably) best

Lawrence D. Phillips describes research at Brunel University into cultural influences on decision-making

Vast indeed is the sublime Creative Principle, the source of all, co-extensive with the heavens! It causes the clouds to come forth, the rain to bestow its bounty and all objects to flow into their respective forms.

I-Ching, 1150 BC

All events, even those which on account of their insignificance do not seem to follow the great laws of nature, are a result of it just as necessarily as the revolutions of the sun. In ignorance of the ties which unite such events to the entire system of the universe, they have been made to depend on final causes or upon hazard, according as they occur and are repeated with regularity, or appear without regard to order . . . .

Pierre Simon de Laplace, 1814

Two different views of the world, one eastern, one western, views that could lead people from east and west to think very differently about future, unknown events. Do such differences exist today, and can they be reliably measured?

My colleagues, George Wright, Gerald Choo, Kee-on Ng, and I in the Decision Analysis Unit of Brunel University's Institute of Organization and Social Studies have been investigating these possibilities over the past year, helped by a grant from Decisions and Designs, Inc., an American firm of consultants who use the recent technology of decision analysis in their work for government and business.

Our research has focused on possible cultural influences in the ways people think about uncertainty and in their reactions to uncertain events. How is this research linked to the passages quoted above? We began our work with the notion that a person's world-view of causality influences everyday thinking about decisions that have to be taken in the face of uncertainty and risk.

The I-Ching portrays a world in which the present is just one moment of a predetermined flow of events, where everything is changing according to universal, observable rules, with change brought about by the interaction of the *yang* principle, representing the active and positive, and the *yin* principle, embodying the passive and negative. In such a world, individuals should seek to behave in accord with the predictable cycle of events, and not attempt to influence events to their advantage.

As John Blofield notes in his first introductory chapter to the I-Ching (*The Book of Change*, London, 1965): "Most eastern sagas commend a happy acceptance of life as it is and prophesy nothing but sorrow and frustration for those whose cupidity leads them to swim against the current of circumstances or to attempt interference with the working of universal laws in order to gain peculiar benefits for themselves. For convenience we call such a world view "fatalistic".

Laplace, on the other hand, portrays the world in terms more familiar to the westerner: every effect has its cause. Events do not just happen through the action of mysterious forces, but are caused by previous events acting according to natural laws that can be discovered by systematic investigations and inquiry.

Our knowledge of the sequences of events is never complete, and so Laplace was led to develop the notion of probability as an expression of our ignorance. Such a world view we might call "probabilistic".

Now imagine that the following question has been posed to an individual who has been raised in a relatively "fatalistic" culture, and to another person who has grown up in a "probabilistic" culture: Will a major earthquake, killing at least 10,000 people, occur somewhere in the world within the next 300 days?

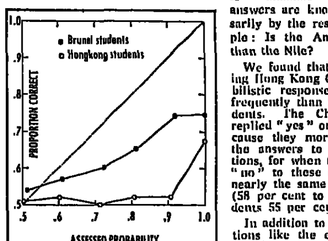


Fig. 1

We think the "fatalist" is more likely to answer "yes", "no" or "I don't know" than the "probabilist", for the "fatalist" will either feel in harmony with events and therefore know the answer, or not feel able to predict such an event.

The "probabilist" may well respond, "not likely" or "possibly" or "good chance", indicating some state of uncertainty about the future event, depending on how well the individual understands earthquake phenomena.

These conjectures have been put to the test in our research, which has so far examined only differences between the relatively "probabilistic" (we think) British and the more "fatalistic" Chinese.

We asked participants in our studies to write a "reasonable and appropriate" response to questions like the earthquake one, and also to "almanac" questions whose answers are known, but not necessarily by the respondent, for example: Is the Amazon river longer than the Nile?

We found that the English-speaking Hong Kong Chinese used probabilistic responses appreciably less frequently than our British respondents. The Chinese more often replied "yes" or "no", but not because they more frequently knew the answers to the almanac questions, for when they said "yes" or "no" to these questions they got nearly the same percentage correct (58 per cent to the British respondents 55 per cent).

In addition to asking people questions like the earthquake one, we asked our respondents to make numerical judgments of probability to almanac questions for which we supplied two possible answers, one of which is correct.

An example: a group of kangaroos is usually called (a) a troop, or (b) a pack. The respondent is asked to choose the answer he thinks is correct, and then assign a probability to indicate how sure he is.

Representative results are shown in Fig 1 for two groups of respondents, 50 Brunel University students, and 53 University of Hongkong students. These plots show the proportion of times the correct alternative was chosen for a given assessment of probability; the plots reveal the "realism" of probability assessments.

For example, we would expect that on all occasions when an individual says he is 70 per cent sure, he would have identified the correct answer roughly 70 per cent of the time. "Perfect realism" is, then, indicated by the diagonal line.

Both groups fall below that line, but whereas for the Brunel students the more sure they say they are, the more frequently they are correct, no such relationship occurs for the Hongkong students. No matter what probability they give, they are right only about 50 per cent of the time. The only exception is when they say they are 100 per cent sure; then they are correct about 67 per cent of the time.

Plots similar to those of the Brunel students have been obtained by colleagues in the United States using different almanac questions with college students and other groups.

Our results with the Hongkong students have been replicated with Chinese nurses and with Hongkong businessmen. Analyses by individual participants also confirm the above findings which are based on grouped data.

It is too early in our study to be very confident of any generalizations, but results so far are at least consistent with our original hypothesis that probabilistic thinking is less likely to be adopted in eastern "fatalistic" cultures than in the west.

There are, of course, considerable individual differences within a culture, but in general the Chinese in our studies adopt a probabilistic "set" less frequently than western respondents, and their probability assessments are less "realistic".

Western participants tend to be right more often the more sure they say they are, but even then they tend to be too sure of themselves—at least for almanac questions!

These results suggest some rather unsettling questions. Without adopting a probabilistic viewpoint, how can an individual take good decisions? Decision analysis, a widely-applied technology of decision making that rests heavily on expected utility theory, often requires judgment-based assessments of probability as an input.

Some of our western respondents

and many of our eastern ones clearly could not provide adequate probabilities. Yet they manage to take decisions which are, presumably, reasonably satisfactory.

Are current theories of decision making in need of drastic revision to accommodate both western and eastern processes? Possibly the technology of decision analysis would be improved as a consequence.

We wonder, too, about the possible implications of our work for east-west communication, and for political negotiations in particular. Such differing world views about future uncertain events must surely lead to misunderstanding and inability to agree on appropriate courses of action.

We are excited by the possibility that we have identified one cultural determinant of individual thought-processes, a topic that has intrigued psychologists and sociologists for many years, but which frequently leads to lines of investigation that end in ambiguity and inconclusive findings.

However we are given cause for concern in the face of questions suggested by the research itself: How would an investigator of this topic from a "fatalistic" culture view our findings, and how would this person react to the clear Laplacian viewpoint that we have adopted in framing our hypotheses and interpreting our results?

The author is lecturer in psychology at Brunel University.

Why polytechnics should stop developing graduate courses

There are many problems confronting those concerned with academic planning in polytechnics and elsewhere, and that effectively means anyone who is sufficiently engaged to be even thinking about courses they would like to see developed. Circular 10/75 from the Department of Education and Science leaves very little doubt that there is not much (if any) room for expansion.

Additional students, we are told, will need to be accommodated within existing resources and staffing ratios will have to be tightened. As the Secretary of State for the Environment said in reply to a Parliamentary question on August 5 there will have to be a standstill next year. Now, more than ever before, academic development is beset with considerable difficulties and dilemmas. Many of the questions we have asked will change. We can no longer debate merely the merits of this new course proposal as against another as additions to our current provision.

Now there will have to be a debate concerning the merits of continuing with some of the courses we currently offer. In other words, much of our planning will involve the consideration of switching resources.

Academic development does not necessarily mean more of the kinds of thing we currently do. It could mean changing emphasis or directions altogether and diverting resources from current commitments.

Tyrrell Burgess has argued that "cuts are as good as increases for doing what you want to do". Economic circumstances provide polytechnics with an opportunity, or perhaps present them with a necessity, to take a long hard look at past commitments and current developments.

In most, if not all, polytechnics, too great an emphasis is being placed upon graduate and post-graduate developments. Considerable effort and energy is being invested in courses at these levels and it is worth considering other developments that should be occupying our minds.

The development of polytechnics has often been talked about as a move towards comprehensive institutions of higher and further education, and yet there is not much evidence to support it.

Similarly, polytechnics have been thought of as "plugging into" the local and regional community. Yet again, the overwhelming majority of courses available are directly aimed at a national market.

This is not to suggest a criticism. It was, perhaps, understandable and necessary for polytechnics in establishing themselves and gaining recognition to demonstrate ability at these levels.

Circumstances, however, change. The fact of polytechnics as institutions offering valid and worthwhile courses has been established. We should now turn our attention to other aspects of our original objectives and concentrate on developing sub-degree work and programmes deliberately constructed for local and regional communities.

The present economic situation adds force to a justification for such a new emphasis. Earlier this year, it was argued in the Letters column in the *THES* (January 31) that one of the possible unfortunate consequences of the implementation of the Houghton Report was that it could lead to undue concentration on grade 1 and grade 2 work at the expense of other levels.

The current financial crisis facing polytechnics reinforces this pressure and those likely consequences. We should stop developing graduate and postgraduate courses and other nationally oriented programmes, except where there is an overwhelming need to do so, and concentrate our efforts on providing opportunities for both full-time and part-time education for local and regional communities.

Such a temporary pause on the higher level work will in no way threaten the quality of the Polytechnics. It could indeed, enhance their status in that they would be offering better value for money and satisfying real local needs.

There are a number of identifiable categories of possible demand that we should take seriously and to whom we should offer opportunities: the 16 to 19 age group; the linguistically deprived; married women; the immigrant population. These and many others are the areas to which we should turn our attention, commit some resources and develop opportunities.

These groups need to be accommodated within the education system, if they are to stand some chance of finding a place within a changing occupation structure.

That the polytechnics have not concerned themselves with these groups and with the extensive development of sub-degree courses is, in part, the reason for the emergence of institutes of higher education which it is hoped will provide an educational service for such groupings.

Polytechnics to be truly comprehensive should engage in the whole range of post-secondary education, full-time and part-time from the 16-year-old onwards.

One of the problems pressing most urgently on polytechnic "managers" and student unions is that of housing and residence. To continue to offer nationally-oriented programmes is to make these problems worse.

Whatever the justifiable claims for improvement in residential accommodation and indeed the housing situation at large, few can doubt that this will remain a major problem for the foreseeable future.

All the more reason for the polytechnics to concern themselves with providing educational opportunities for those people who are already in residence in their immediate surrounding districts.

To offer "national" courses and to insist on "home based" students is a contradiction rightly resisted by students and others. Polytechnics, in co-operation with local colleges of further education, should seriously attempt to construct comprehensive educational structures to accommodate the local community.

The educational opportunity that we offer should be flexible enough to facilitate both the full-time and the part-time students' finding a place in the system appropriate to their current interests and abilities. They should have the opportunity of movement and transfer in keeping with the development of their motivation, ability and performance.

The system should, in other words, provide recurring opportunities so that no one failure or change of interest should permanently stop their progress.

The polytechnics should now concentrate on developing links between part-time and full-time courses and between themselves and the local community. Planning in the immediate future in polytechnics should involve committing any additional resources to local oriented and sub-degree developments.

We should look closely at existing resource distribution and consider some switching to those latter areas. This should be done even to the extent of halting, temporarily, anticipated graduate and postgraduate development.

At this time, with cuts being imposed, we do indeed have an opportunity to "put our house in order" and achieve more fully the educational objectives originally set us. We are in danger of contributing to an over-qualified population as we increasingly develop as institutions, producing for "upmarket" consumption.

Roy Bailey
Stuart Bentley
Michael Harrison

Roy Bailey is convenor of the Course Structure Project at Sheffield Polytechnic, and Stuart Bentley and Michael Harrison are members of the polytechnic's department of applied social studies.

NORTH AMERICAN NEWS

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Senate probe uncovers major loans scandal

A Senate inquiry has revealed that mismanagement and fraud in the administration of student loans has cost the Government millions of dollars. The Health, Education and Welfare Department kept such poor records that in the past four years it has paid out vast sums in bogus loans and unnecessary insurance to private lenders.

The inquiry, now drawing to a close, was prompted by a major scandal in California, where the owner of a string of private colleges obtained over $6m in loans for his students, sold them to other financial institutions and then went into liquidation.

Apparently the owner, using the false name of Fred Peters, bought the now defunct Automation Institution of Los Angeles, and set up a chain of five "West Coast Schools".

He then advertised for students, particularly Blacks and Spanish speakers, as it was easier to get loans for minority groups. He applied for $6m in loans, keeping at least $300,000 for himself and closed the schools.

Mr Peters was subpoenaed to appear before the Senate committee last week, but two days before his testimony said he had hurt his back and could not travel. The regional HEW official in San Francisco had refused to testify on the grounds that he would incriminate himself. He has since resigned.

The scandal has been magnified by the Government Accounting Office, which last week attacked HEW for its financial mismanagement. The GAO said records were so poor that it was impossible to find out how much money the Government was losing from its $8,800,000m student loan programme.

Under the system, students are lent money by approved lenders—usually banks or colleges—who are insured by the Federal Government. If the student later defaults on his repayments, it is up to the lender to try to reclaim the money. If this is impossible the Government repays the lender.

The GAO found in a random sample that in 96 per cent of the cases where the Government had reimbursed a lender, the lender had made no effort to claim the money from the defaulting student.

The hearings have acutely embarrassed HEW, which has now strengthened its admittedly understaffed regional offices and is installing a computer to monitor student loans—though this will not be ready for another 10 months.

It has also audited 25 of the colleges making the largest number of loans and drawn up stricter rules for institutions taking part in the scheme.

One repercussion is likely to be a move to stop privately owned colleges being allowed to make Government-insured loans and there are already Bills before Congress to this effect. Earlier this year a privately owned Chicago group of colleges went bankrupt leaving $150m worth of guaranteed student loans paid out by 40 financial institutions that are now trying to get their money back.

White House to bring back science unit

The reestablishment of a White House Office of Science and Technology, abolished by President Nixon in 1973, came a step closer last week when President Ford appointed two advisory groups to plan for the new organization.

A Bill to set up a Science Office as part of the President's executive office was passed in the House of Representatives earlier this month, and the Senate is almost certain to approve.

The Bill does not specifically state whether the new office should have any authority over military research and development, saying only that it should prepare an "annual review of funding proposed for research and development of all Federal agencies".

Colleges told to play stock market

Private colleges and universities should invest on the stock market if they want to avoid immediate bankruptcy, says a research report published this week. They should not spend more than 5 per cent of their endowment each year, ploughing back the rest for reinvestment.

The report, by a New York research foundation, Twentieth Century Fund, cites the conclusion of the Carnegie Foundation earlier this year that financial difficulties would force one in every 10 private colleges to shut down, merge or consolidate within the next five years; it urges trustees to decide what they want their institutions to do in the future.

Jews 'top education league'

Jews are the "best educated Americans", followed closely by Episcopalians and Presbyterians with Catholics catching up fast, according to a study made for the Ford Foundation by the National Opinion Research Centre at Chicago.

Jews average 14 years of education, Episcopalians 13.5 and Presbyterians 12.7. The middle level of educational achievement—just over 12 years of education—is occupied by the Methodists, Catholics and Lutherans in that order. Baptists are at the bottom with an average of 10.7 years.

The study left out Blacks and Spanish-speakers because so much research has already been done on them. The report said difference in income, educational and occupational achievement did not necessarily prove discrimination. For instance, Irish Protestants were among the poorest, least-educated groups, but nobody suggested there was discrimination against them in American society.

Jews and Catholics, particularly the Irish, did best in rising above the level of education of their ancestors. Jews, Presbyterians and Episcopalians were the most successful in achievement, but they also came from the best-educated families.

Comparing the educational achievement of one group with those members of the other group whose parents had the same educational background, the study found Catholics were catching up with Episcopalians, and Jews were leaving everyone else far behind. Overall, however, the study found educational differences were narrowing in American society.

$700,000 link for sciences and arts

from Ian Anderson

STANFORD

The National Endowment for the Humanities has made a $700,000 grant to San Francisco State University to launch an ambitious five-year programme aimed at promoting closer links between the sciences and the humanities.

This academic year has been set aside as a planning year for the programme, which has been called Nexa. Team teaching of 10 undergraduate courses will start next year. Two lecturers—one from each discipline—will teach each course.

By 1980, 18 courses will be taught, involving a staff of 36 lecturers. Initially, the courses will be available as options for those enrolled in the sciences or in arts; later the courses will be able to be taken as a major area of study for a degree.

The grant is the first made as part of a new NEH policy to encourage greater understanding between the scientific and humanistic traditions. "It can be regarded as somewhat of an experiment", the director of the programme, Professor Michael Gregory, professor of English, said. "The NEH has said that it will award us another $300,000 if we can raise $150,000.

"The course will be a history of ideas", he said. "We want to keep it from being a pop curriculum. You don't need a course to tell you that pollution endangers health or that the bomb should be banned. That can be argued in one meeting."

Middle classes benefit most from new aid policies

from Angela Stent

CAMBRIDGE, MASS.

Despite the soaring cost of higher education, many colleges this year have increased their financial aid to students and, under new guidelines, parental contributions have been substantially reduced. Middle-income families, who have traditionally been worse off in terms of the help granted to their children, are the main beneficiaries from these new guidelines.

In the past six years, tuition and other fees at private and public colleges have risen by nearly 50 per cent. Many middle-income families have been in the position of being too prosperous to qualify for financial aid, but not rich enough to afford the bills—totalling $6,000 a year at some universities.

To help these groups, the College Scholarship Service, the division of the College Board that sets financial aid guidelines used at many institutions, has dramatically liberalized the formula for determining the amount parents are expected to provide.

For instance, a $20,000 a year family with three children, of whom one is applying for financial aid for college, would have had to pay $3,190 towards the costs last year. This year, the same family would have to pay only $1,630. And with an annual income of $28,000 the maximum contribution would be $4,310, instead of $6,330 last year.

However, although about $6.1 billion worth of financial aid is available this year for college students, that amount falls short of the total estimated need by about $2 billion. To compensate for this, some colleges are now making more scholarship money available for students.

Bennington College, for example, which, with its annual $6,780 cost per student has the highest tuition and board fees in the country, has increased its student aid budget by 11 per cent this year. Twenty per cent of its students now receive aid. And at less expensive colleges funds cover up to 90 per cent of students' needs.

The amount which each family pays is determined by a comprehensive accounting of family income, assets and liabilities. Students are also expected to contribute towards the cost of their education. They are asked to allocate 35 per cent of their assets plus a portion of their summer earnings towards their education.

The difference between the amount provided by student and parents and the total cost is the amount that the financial aid officer attempts to make up with scholarships, loans and student jobs.

The main sources of financial aid available to students are: various Federal funds, distributed by the colleges; Federal Basic Educational Opportunity Grants, for which students must apply directly, if their parents' income is less than $12,000; loans under the Guaranteed Student Louns Programme; and various State and National Scholarships which depend both on merit and on parental income.

Washington chases petrodollars

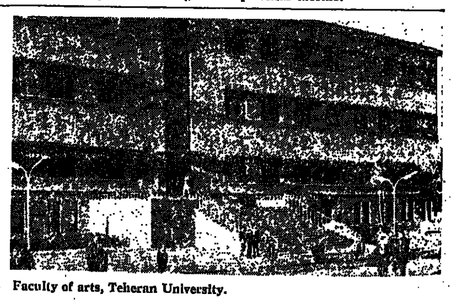
CAMBRIDGE, MASS.

As a result of contracts signed this year, the American-Iranian educational cooperation business is booming, one of the few bright stars on an increasingly dismal financial horizon for US higher education.

The most dramatic deal concluded recently was that between Georgetown University, Washington, and Ferdowsi University in Meshed, eastern Iran. Under this five-year, $11m agreement, American professors will help teach economics and other subjects.

Pahlevi University, in southern Iran, has been collaborating with the University of Pennsylvania for years, and this cooperation has served as a prototype for the new agreements which have followed the upsurge in oil earnings since 1973.

Harvard University has negotiated a $400,000 agreement to help establish a graduate-level university for training professors in a province north of Teheran. The planned



Faculty of arts, Teheran University.

Reza Shah Kebi University has appointed a Harvard professor to serve on its governing board, as well as professors from the California Institute of Technology and Princeton. The university will have 500 students and its administration will be modelled on Harvard's.

The University of Wisconsin at Green Bay will help another Iranian university develop instructional materials, and test-teach the materials in Iran. Other contracts, all for less than $2m apiece, involve Stanford University, which will help to establish educational television, MIT, which is training Iranian nuclear engineers, and George Washington University, which will train managers.

The total value of American contracts so far, however, remains well under $100m, a small sum compared to Iran's estimated petrodollar income of more than $17 billion a year.

Harvard boosts its reserves

Harvard University increased its endowment fund last year by $1.32 billion according to the university's annual financial report. This represents a 13 per cent increase over the previous year's $1.19 billion endowment. The rise in the value of the endowment marks a significan reversal of the 16 per cent drop during the previous fiscal year.

The Harvard Management Corporation, the investment group handling the university's portfolio, attributed the rise in endowment primarily to the recovery of the national stock market.

At the same time as the university released its financial report, Professor Henry Rosovsky, dean of the Harvard faculty of arts and sciences, published his annual budget letter to the faculty. In it, he said that his "principal economic goal for 1976-77 is the achievement of a break-even budget".

He reported that, whereas last year Harvard's deficit was about $2m, this year the deficit will be about $1m.

Heavy enrolment in California

The inability to find suitable work has been given as the reason for an unexpectedly large number of students entering or returning to universities and colleges in California this year.

The nine-campus University of California enrolled 128,478 students this autumn, 8,042 or 4.7 per cent more than last year. An increase of less than 2,000 had been predicted.

The 19-campus State University and College system enrolled 311,308 students, 19,766 or 6.8 per cent more than last year. Here, a rise of 2 per cent or about 5,000 students had been forecast.

Big business pays 8.5pc more

Corporate contributions to higher education rose by 8.5 per cent in 1974 over the previous year. The Council for Financial Aid to Education estimates that in 1974 business and industrial corporations in the United States gave a total of $445m to higher education.

But the rise in corporate profits—14.7 per cent—outstripped the rise in gifts to higher education. Based on a survey of 709 major corporations, the council calculates that corporate profits went from $122.7 billion to $140.7 billion during the same period.

Columbia may shut colleges

from Thomas Cahill

NEW YORK

Hounded by financial difficulties, Columbia University, which recently put $5m of its property up for sale (*THES*, October 31), continues to look for ways to cut costs. The most obvious road to retrenchment —the closing of some of its colleges —is increasingly a cause of conflict in the administrative circles of this Ivy League institution.

Dr Peter Pouncey, dean of Columbia College, has proposed that two schools—Barnard College and the School of General Studies— be shut down and merged with Columbia College. Barnard College is the "women's affiliate" of Columbia College. The School of General Studies is an undergraduate school for adult and part-time students.

Administrators at both Barnard and General Studies are vigorously opposing Dr Pouncey's proposal. Barnard, for example, has just appointed a new president, Dr Jacquelyn Mattfeld, who is well known as a competent manager of finances. Barnard, which last year ran deficits of $32,000, is facing a deficit of several hundred thousand dollars.

Lebanon

Bankrupt fear as civil war shuts AUB

from John Munro

BEIRUT

The civil disorder that has plagued Lebanon for the past six months has forced the American University of Beirut to suspend classes, at least until January.

The university's president, Samuel Kirkwood, originally planned to open the academic year on schedule, on October 2, and 3,700 students arrived for preliminary registration.

However, as the violence increased, it became clear that the possibility of opening—even for a shortened, intensified programme—was remote.

Meanwhile, the suspension of classes at AUB could worsen the university's already precarious financial position. The university entered the 1975-76 academic year with a projected deficit of $4m. Last summer, the university announced plans to cut at least 33 per cent, or $11m, from its budget by mid-1980.

Officials hoped to cover the 1975-76 deficit by selling part of its picturesque campus and by increasing tuition fees.

Now land values have plummeted, and the most optimistic estimate for student enrolment—assuming the university is able to open at all —is 2,500, about half of the number enrolled during the 1974-75 academic year.

The most conservative estimate is that, should the academic year begin in January with 50 per cent of the hoped-for enrolment, the deficit will reach $7m.

Beyond next January, the only hope for the future of the university may be a substantial increase in financial aid—either from Arab countries or from the United States.

However, the Arab countries have shown reluctance to provide funds for the university and have preferred instead to support their own national universities. The United States now provides the university with about $6m a year through the Agency for International Development, but with growing Congressional scepticism about foreign aid, few observers expect that figure to rise significantly.

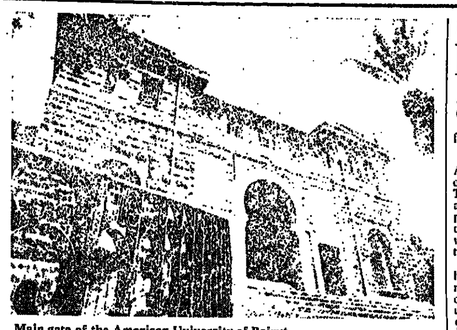
Whether new investments from the Arabs or the United States will save the university in its present form will be largely dependent upon the nature of the political settlement in Lebanon after the fighting is over.

The university has followed a non-political path in the midst of the fighting, but it has aroused suspicions of both left and right. Moslem and Christian, with each group accusing it of supporting the other.

Once the decision was made to suspend classes at least until January, most of the students who were not natives of Lebanon returned to their own countries.

Faculty members were placed on "enforced, extended summer vacations" and many of them moved their families to the safety of nearby countries.

The university was founded in 1866 as the Syrian Protestant College. It adopted its present name in 1920.



Main gate of the American University of Beirut

Italy

Job protests stepped up

from Patricia Clough

ROME

Some 20,000 students and school children marched through the streets of Rome last week demanding, among other things, more efforts to provide employment for graduates and school leavers.

More than 800,000 graduates from universities, technical and professional colleges are already out of work and more are expected to follow. Each year the universities turn out some 30,000 more graduates than the country can provide work for and the figure is expected to rise to 55,000 in 1977.

Although usually aware that a degree is now virtually worthless, school-leavers crowd into the universities—now open to anyone who has completed their secondary education—simply to fill in time and postpone for another three or four years the disheartening search for a job.

The number of students in the overcrowded universities is estimated to have risen from 876,000 last year to 930,000 or more this year.

The search for jobs at times reaches almost grotesque proportions. A State competition for 23,000 middle school teachers received 500,000 applicants. Graduate engineers place advertisements in the papers offering their first two months' pay to anyone who can find them suitable work.

Many, however, simply resign themselves to accepting frustrating work far below their intellectual level.

West Germany

Student growth slows, but more go for 'relevance'

by Günther Kloss

Latest official statistics show that for the first time in many years the rate of increase in the number of students registered at universities, comprehensive universities, colleges of education and advanced vocational colleges has slowed down.

In the winter semester 1974/75 there were 788,442 students, 55,543 or 7.6 per cent more than in the previous year. While this increase is massive in absolute figures and once again exceeds official forecasts it nevertheless compares unfavourably with the 10.8 per cent growth from 1972/73 to 1973/74.

Over two-thirds of all West German students, 533,000, were registered at universities in 1974/75. This figure includes several thousand undergraduates reading for a degree in education at universities in Bavaria, Hessen and Hamburg. They would be attending separate colleges of education in all other *Länder*.

The total university figure also includes over 39,000 students following academically orientated—as opposed to practice orientated—courses at the comprehensive universities of North-Rhine Westphalia, Hessen and Bavaria—the only *Länder* where this type of institution exists.

Total student numbers in institutions of university status grew by only 3.6 per cent from 1973/74 to 1974/75, whereas those at advanced vocational colleges jumped by an astonishing 18 per cent.

While it is clearly premature to draw firm conclusions about longer-term trends from these new admissions figures it is nevertheless clear that more *Abiturienten* than in previous years now appear to favour these colleges.

One reason is that they simply cannot get into university. In fact a diploma of an advanced vocational college entitles them to a transfer to university, thus largely circumventing the *numerus clausus*. One third of the college intake now make this change.

In addition, it could be that grammar school leavers are beginning to get worried about graduate unemployment and prefer more practical higher education courses with a view to better job prospects.

Some 22.8 per cent of all West German students were in their first year in 1974/75, slightly fewer than the year before. Taking all students of all sectors of higher education together, they constituted in 1974/75 21.4 per cent of the age group. This represents a further rise compared with 1973/74 (20.3 per cent) or 1971 (17.5 per cent).

South Africa

Prison for white law lecturer

by Joan Brickhill

A senior law lecturer at the University of Natal in Durban, Raymond Suttner, has been sentenced to seven and a half years' imprisonment under the Suppression of Communism Act.

Mr Suttner, who is white, pleaded guilty to taking part in the activities of unlawful organizations (the African National Congress and the South African Communist Party), encouraging others to undergo training and to obtaining information which could be of use in furthering the objects of communism or of any unlawful organization.

India

Court halts 'productivity deal'

from A. S. Abraham

BOMBAY

The Bombay High Court has granted an interim stay restraining the provincial Government of Maharashtra, of which Bombay is the capital, from enforcing certain clauses of a resolution it had earlier announced changing the terms and conditions of service for teachers in universities and affiliated colleges. (*THES*, November 21).

The stay follows the admission by the court of a petition filed by the Maharashtra Federation of University Women and College Teachers' Organizations and by seven college teachers from different parts of the State.

The petition challenges the Government resolution linking the revision of teachers' pay-scales, as proposed by the University Grants Commission, with the introduction of new duties and obligations for them.

These include higher minimum qualifications for teachers in service, a minimum workload of 40 hours a week, the reduction of vacations from about three months to six weeks, compulsory examination work without extra payment (as has been the practice so far), the framing by universities of a code of conduct for all teachers and the assessment once every three years of teachers' work by the authorities.

The petitioners argue that the Government resolution incorporating those changes is in utter disregard of official statements in the provincial legislative assembly made earlier in the year, that it goes beyond the jurisdiction of the provincial Government and that they withdrew their boycott of examination work earlier in the year on the strength of official assurances given at the time concerning the Government's willingness to grant them the higher pay-scales. These assurances, they say, did not give even a hint of the provisions now embodied in the impugned resolution.

France

Budget hammers home austerity message

from George Morgan

NICE

Austerity is once again the order of the day for French universities. The 1976 higher education budget, approved by Parliament last week, plans an increase in spending of only 15 per cent over 1975. This will bring higher education expenditure to £900m, excluding salaries.

The lion's share of next year's budget is earmarked for university maintenance. This will account for over £820m, an increase of 18.2 per cent. In contrast, spending on new equipment and new building projects is down by 9 per cent and 7 per cent respectively.

One of the major problems to emerge from this year's budget debate was the increasing burden being placed on university finances by auxiliary teaching, technical and administrative staff, paid for directly from university maintenance grants. Normally university staff in France have civil servant status and are paid from a separate budget held by the Minister of Finance.

In recent years, however, more and more auxiliaries have been taken on, particularly in science faculties, in an effort to cater for the increase in student numbers. It is now estimated there are between 8,000 and 10,000 auxiliaries in universities throughout the country. In some establishments they account for 40 per cent of all staff.

As university grants dwindle and as universities seek to make urgent savings, many of the auxiliaries are in danger of losing their jobs. Under considerable pressure last year M Jean-Pierre Soisson, the Secretary of State for Universities, agreed to intervene. As a first gesture the Minister has now announced auxiliaries are to be paid for out of the same budget at an estimated cost of £6m.

An extra £13m will also help to supply more and bigger student grants as part of M Soisson's plans for a swing from indirect to direct aid.

However, the increase does not offset recent cuts in indirect subsidies which have led to a 30 per cent increase in the cost of student meals and a 50 per cent increase for student accommodation.

Top scientific institute claims research is being 'massacred'

from our correspondent

NICE

Paris VI, France's largest university and Europe's biggest scientific and medical research centre, is on the verge of bankruptcy. As deputies met last week to approve the 1976 budget for higher education, the 35,000 students and 4,260 teaching and research staff organized a one-day strike against the university's current shortfall of £1.5m. M. André Herpin, president of Paris VI, said that the university would be forced to close its doors if the Government did not increase its annual £8m grant.

Earlier, the university council had taken an unprecedented step by inserting a half page advertisement in *Le Monde*, France's leading daily newspaper, to protest about the "massacre of research" at Paris VI.

According to the advertisement the amount of cash available for the purchase of vital equipment and material has decreased since 1971 from £1.75m to £1.26m. As a result many research teams have already had to curtail their activities and there are now plans to suspend all post-graduate research programmes.

M. Herpin attributed the university's deficit to rising costs. Domestic fuel has increased by 45 per cent this year and some materials needed for experiments had doubled in price.

Ministry officials, however, blame poor university management. In particular it is claimed that Paris VI has taken on too many "auxiliary" workers, paid for directly out of the university maintenance grant. At Paris VI these employees cost the university an annual £2.3m, far more than this year's shortfall.

In the budget announcement Paris VI has been allocated an additional £500,000. Though falling short of the £1.5m required by the university it is hoped that the extra cash will provide an incentive to the university authorities to tighten up their financial organization.

Other Paris universities, notably the medical school at Paris VII and the science university at Paris Orsay are currently experiencing similar problems to Paris VI.

Republic of Ireland

Open College plan floated

from Peppy Barlow

DUBLIN

Proposals for an institution closely resembling the "Open College" suggestions which have been made in Britain are currently under consideration by the National Council for Educational Awards as part of its overall strategy for the future development of non-university higher education.

The NCEA proposals, which are being examined in detail by one of its sub-committees, envisage that qualifications up to and including degree level could be acquired by students on the basis of accumulation of credits, taken in the student's own time and possibly at a variety of existing colleges.

Unlike the British Open University, the NCEA scheme does not include any radio or television component. Quite apart from the fact that the Government has found it impossible to raise the money for even a modest schools radio service, pressure for a university of the air has been sharply reduced by recent reorganization which has attached the colleges of education to the existing university structure and which has ensured that, from next year, primary teachers will leave with BEd university degrees.

In the past, the Irish National Teachers' Organization was one of the main sources of such pressure, and on occasion organized functions to which both the Minister for Education and Open University personnel were invited. Successive ministers, while always ready to accept the invitations, consistently ignored such blandishments on the grounds that an Open University was—and still is—a low priority in Ireland.

Some people living in the Republic, notably in areas on the eastern seaboard where reception of BBC television is normal, are thought to have registered for Open University courses, using accommodation addresses in Northern Ireland. But they do not amount to more than a handful and certainly do not constitute a major pressure group.

The NCEA proposal would require an amendment of the Government's decision of last December to delegate to the council of its degree-awarding function. But as this is an area in which the universities are not likely to be involved, no serious problems are likely to arise.

Existing institutions such as the regional technical colleges would probably be the bases for an accumulated credit degree system—a measure which would head off pressure from individual RTCs for enhanced status to enable them to compete with adjacent universities, while at the same time satisfying the need for a system with a wide range of student options.

TIMES PAST — THE TIMES

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A 10th anniversary well worth remembering

The Social Science Research Council was established nearly 10 years ago this week as a result of the recommendations of the Heyworth committee on social studies. In spite of the controversy that has surrounded aspects of the council's work during the past year, it is an anniversary well worth celebrating. Heyworth's blanket recommendations have been amply fulfilled in the scale and quality of research administered by the SSRC.

Just as the social sciences are themselves still on trial—it is too early to say whether they have "delivered the goods" or even whether some of them should properly be called sciences—so the SSRC's first decade has been an experiment. Even beyond the financial crisis of 1970-71 when money started to flow less freely, the period has been one of institutional innovation with a whole new tradition of research administration to be founded. On occasion the SSRC has virtually been midwife to the birth of whole new social science disciplines and sub-fields. Only so much could be learnt from the administrative models of the natural sciences or the old Department of Industrial and Scientific Research and the SSRC has had to break many new paths.

There is a residual suspicion of the SSRC among some academics which expresses itself, as Mr Michael Young, a former chairman, has pointed out, in their use of a French word, *dirigisme*, to describe anything the SSRC does which is not a simple response to university suggestions. Nevertheless it is often difficult to disentangle this kind of criticism from the failure of a department or academic to get postgraduate awards or research money as they wished. Some critics switch rapidly from wearing the clothes inherited from Max Weber or Friedrich Hayek to protect academic freedom from the dead hand of bureaucracy to holding out their hands for the still plentiful research money available from the SSRC.

Many such fears of governmental interference through the SSRC have been exaggerated and do an injustice to the neat footwork of chairmen like Professor Robin Matthews. Basically the SSRC inherited university models of self regulation: its council and committees comprise academics judging and administering their fellows. For some people indeed it has been too like the university, following narrow subject divisions and rewarding the well established at the expense of younger men.

The very existence of the SSRC has played a part in educating other academics, the wider community and politicians in what the social sciences are and what they can offer the policy maker. It is more difficult to see whether education has worked the other way, to reduce academic suspicions of government. Politicians cannot be blamed for remaining sceptical when some social scientists take every opportunity specifically to deny their subject is at all "positivist" and can provide government and society with knowledge and techniques.

The two sides of this issue were succinctly described recently by Professor Matthews. "The one side (as seen by its supporters) stands for research that is problem oriented, timely, transcends disciplinary boundaries, reflects the complexity of reality and is centrally selected. The other side (as seen by its supporters) stands for research that advances knowledge, is uninfluenced by fashions, operates at the frontiers of existing disciplines, is rigorous and arises from the ideas of the researchers themselves rather than from dictation by bureaucrats." Needless to say, as an academic-run organization, the SSRC reflects both views and moreover many of its most "directive" policies cut right across this divide as when research money is given for conceptual work—which is almost a definition of "good" research anyway.

Most of the research strategies pursued by the SSRC are still too young to be properly judged. Take its much maligned research units. It is too soon to judge their success as academic organizations, but, none the less, it can safely be said that as experiments in escaping from the constraints of university departments and the pressures of teaching, they were necessary, and might, indeed, have been tried on a larger scale than they were. The SSRC has supported the growth of intellectual centres like the Department of applied economics at Cambridge with its work on large scale economic modelling. But at the same time it has attempted to foster individual academic initiatives by various schemes such as simply giving university teachers time off to think about their subject.

On another level altogether the SSRC has introduced new elements in British academic life. To obtain research support, even the most distinguished academics have to submit to review by their peers in a way only required if they applied for promotions or membership of a learned society. But the council has been a victim of British academic life, too, in the often suspiciously close-knit relations between senior men in particular fields that can turn "peer review" into grant-giving by acclamation.

During the past year the council's staff problems and the controversy involving Aberdeen University in the summer have given impetus to what the present chairman, Mr Derek Robinson, calls a reappraisal of some aspects of the council's work.

There are problems to face. The SSRC has been guilty in the past of favouring closer government when imaginative discussion involving the whole academic community was needed: it is a body that surely has no need for the Official Secrets Act. Has the role of the independent non-university research bodies like Political and Economic Planning and the National Institute for Economic and Social Research been under-valued? Has the council been insular in its outlook and not learnt all it might from, say, the French with their splendid edifice of the Centre National de Recherche Scientifique? Has it learnt enough in the past towards those elements in the academic world who fear government too much?

There is a strong need for a review of social research in Britain that encompasses what the SSRC does and what goes on within government and between government and university social scientists directly. What is the future of the SSRC's new "research initiatives board" with a budget as small as it is?

Mr Robinson and his staff still have a job of proselytizing on behalf of both the council and the social sciences. They can at least rest in the conviction that if the SSRC did not exist, it would have to be reinvented 10 years on.

LETTERS TO THE EDITOR

University salaries

from Professor John Saville

Sir,—I do not know why Mr Tattersall shall assume (*THES*, November 21) that my colleagues at Hull agree with my ideas on the present position of professors; I am sure many of them do not.

This general problem of academic salaries—and I was referring only to professors in my original article—requires a serious discussion in a much wider national context. I note with interest that Mr Tattersall uses as his first reference point, remarking that their leaders "would laugh themselves silly" over the academic wage history of 1971-4. I take this comparison as a typical example of middle-class prejudice on Mr Tattersall's part.

Despite their two major confrontations of recent years, the average miner at the coalface will be earning today not much more than a university lecturer on his first appointment at say the age of 25; and the gap—in terms of wages, working conditions and pension rights—will rapidly widen in favour of the young academic as he moves up the salary scale.

The comparisons that we need to make are with comparable professions: with the doctors, for example, and the top grades of the Civil Service. My own view is that both deserve to be paid more than university professors—in most respects their work is more demanding, but I am also clear that in both cases they have used their bargaining position to achieve a quite disproportionate share of the national income available to the higher professions in general.

Since 1945 the doctors, at all levels, have proved themselves to be the most astute, and the most mercenary, pressure group among the middle classes—leaving aside the business community; and the administrative grade of the Civil Service have persuaded their political masters into giving them a much better than average pay and pensions deal to which I certainly object.

Nor do I in any way support the ways in which the Houghton award has been implemented. While I am strongly in favour of breaking down the barriers—real and snobbish—between the various sectors of tertiary education, the stupidities of the Houghton settlement have now made the achievement of a properly integrated and reasonably harmonious system of higher education much more difficult.

Polytechnics vary notably in their efficiency; there is much more academic deadwood around than in the universities; and their administrative and academic structures, overweight and in many cases overpaid, are all calculated to encourage incompetence, not to say decrepitude. I agree with the recent *THES* editorial that universities today are the most efficient branch of higher education, although there is still plenty of room for improvement. We are not without our own deadwood, a statement which certainly does not exclude professors.

I do not, however, draw from the above the conclusion that university staffs should sharpen whatever weapons they have, or think they have, in order to improve their fighting strength in the present jungle of wage relativities. We need a much more rational appraisal of financial awards to professional groups as a whole, and its implementation will take time; but for every group at the present time to try to claw their way to the top of the queue will perpetuate the existing unsatisfactory situation.

For the universities, confronted with financial stringency for several years ahead, our most urgent demand ought to be the maintenance of those services directly relevant to academic standards—library provision, research facilities and additional staff to meet the growing student intake. I do not want better paid professors in institutions whose general academic facilities are declining fast, and I wish the Association of University Teachers would pay greater attention than it is doing at the moment to these matters of our academic standards.

It is for those reasons that I cannot accept the arguments of my friend Professor Sidney Pollard, published alongside the letter from Mr Tattersall. I accept, of course, that the Department of Education and Science and their political leaders—both Tory and Labour—have been conducting a war against the universities and that Labour ministers are just as philistine, and as incompetent in educational matters, as their Tory predecessors.

I am aware, *pace* Mr Tattersall, that morale is low, but since I do not accept the arguments, I have to say that I find the present squealing and squawking both self-indulgent and distasteful.

To underline my argument, and to confine myself at this point only to the university sector, I am very much more concerned at the likely decline in general academic and research facilities than I am with salaries, and I am deeply worried at the bleak prospect that confronts us in the next few years.

Yours faithfully,
JOHN SAVILLE,
Professor of economic and social history,
Hull University.

from Mr C. Snell

Sir,—Professor Newbould is reported (*THES*, November 14) to have said that AUT membership fees might as well have been paid to Oxfam. This is said to have followed a series of salary comparisons which indicated the manner in which professorial salaries have fallen behind.

As acting chairman of a local association of the AUT, may I point out that his comparisons do not differ substantially from the AUT national policy of using job comparability arguments whenever they are permitted by the government in power.

In the recent disgraceful treatment of an arbitration award (from a tribunal whose terms of reference were fixed in advance by the Government) it is noteworthy that, with a few splendid exceptions, the protests have come from non-professorial teachers, the professorial body being, for the most part, dumb.

Some of that body have from patriotic duty opposed pressures to remove the "inequity" of which the tribunal has written. We have complete evidence of a university teacher whose take-home pay exceeds what he would receive on national assistance by £7 per week, £1 for every year he has been in higher education, but many senior staff are as indifferent to the hardship of junior staff as they are to the unfair discrimination against their own salaries and status.

A similar attitude governs the response of senior academics to the severe cuts already imposed on university finances. Statements and letters such as that by vice-chancellor Merrison (*THES*, November 14) give encouragement that some senior staff are fighting public and private battles against prejudice and ignorance, but they are not very numerous.

The AUT is as strong as its membership permits it to be. It is the numerical strength of those who for many reasons stand aside from wage bargaining that is the source of weakness, not the failure to press salary comparisons. Professor Newbould could have drawn the conclusion that in future professors should give more sustained support to their professional association, in addition to giving to Oxfam.

Yours faithfully,
C. SNELL,
Department of civil engineering,
Nottingham University.

Are you working class?

from Mr Paul Rathkey

Sir,—Trevor Marshall (*THES* November 21) raises some important questions concerning the definition of class in contemporary society.

I would agree with his first line of argument, that unitary does not exclude a group from the working class. Also with the third, that no meaningful distinction arises out of a definition in terms of productive or non-productive work. However, as regards the second and fourth of Crewe's points, concerning conditions of employment and job control, I feel Marshall's analysis is wayward.

To say academics produce surplus-value is to impede that term of its original meaning—by the same criteria it could be argued that teachers of business and management courses produce surplus-value as they can also be viewed as increasing the productivity of labour. This is hardly what Marx had in mind. Marshall's use of false consciousness is equally slipshod—for many the purpose of the job will preclude the possibility of ever attaining "true" consciousness. In carrying out the edicts of management can an industrial relations officer be said to be guilty of false consciousness?

Marshall's dichotomous view of society tells us little about the very real distinctions which exist between various kinds of work. Having at times worked as a manual labourer, a clerk-worker, a civil servant, an accountant, and a university teacher, I find the allotment of proletarian to all these jobs mind-bending, where not mind-blowing. Class sympathies may be very important, but feelings alone do not define social or economic class.

To concur with Crewe that university teachers cannot be considered part of the working class does not automatically throw us into the laps of the bourgeoisie or petite bourgeoisie for that matter. Social class is a much more complex subject than this "if you are not part of the solution you must be part of the problem" type of analysis.

How we work, the function of that work, and equally importantly under what conditions (both materially and structurally) we work, are factors which no amount of abstract philosophizing can gloss over.

We are not all proletarians now, however much it might suit us to think so. Such economic simplification can all too easily result in mystification. The blurring of occupational differences and class alignments is at least as misleading as suggestions that academics and other "middle-class" groups have no interests in common with those who have traditionally been regarded as forming the working class.

Yours faithfully,
PAUL RATHKEY,
York University.

Poly directions

from Mr Brian Cane

Sir,—Your editorial (*THES* November 14) describes the non-university sector as "floundering". This is one of the colleges of higher education which has a very clear idea of its direction.

I believe there are about 25 such colleges of higher education, developed from large colleges of education. The introduction of BA general and honours alongside BEd honours degree courses in these colleges does not greatly disturb the balance in favour of arts and social sciences, because those subjects are already among the chief areas of the curriculum.

The new development merely emphasises the fact that many large colleges of education have been undergraduate institutions for five or six years now, and have attracted a large number of very able sixth formers in the arts subjects. They will continue to do so because they offer an alternative and distinctive style of higher education which is complementary to that given in universities and polytechnics.

Yours faithfully,
BRIAN CANE,
Principal,
C. F. Mott College of Higher Education,
Liverpool,
Lancs.

more letters page 4

Plato to NATO

Roy Edgley discusses the depoliticization of philosophy, and its role in defence of the university as a neutral and apolitical institution

The enormous expansion of higher education, especially since the Second World War, has also been an absolute expansion of intellectual activity: professional intellectuals, as well as the intelligentsia the universities supply to the other professions, have been a growth group in our society.

Philosophy has shared this prosperity. It has been said that there are more scientists alive at present than have existed in the whole prior history of the human race. To the extent that that's true of scientists, given the problem of reading back that category of *science* into history, probably much the same is true of philosophers also.

The output of philosophical books, and especially of articles in philosophical journals, has since the war been colossal. It has been produced almost entirely by academics, for consumption by their colleagues and students.

As what we might call the social reality of philosophy has expanded in this way, its place on the intellectual map has shrunk. One of the problems of reading back the category of philosophy into history, one of the problems of identifying as philosophers both what Plato did and what contemporary philosophers now do, is that professional philosophy has been transformed into a technical specialism, one among others: the technique of linguistic analysis.

The distance we have travelled since Plato can be seen in a variety of ways. One of the most significant is what we might call the depoliticization of philosophy. Socrates was the gad-fly of the state; and for Plato, following the argument wherever it led, philosophers were or should be kings.

In twentieth-century Anglo-Saxon philosophy, the nearest thing to a gad-fly of the state has been Russell, one of the founding fathers of the analytical movement. But he repudiated the phase of linguistic analysis, and at the very moment when political dissent began to dominate his life; and no philosophical argument led him to political role. Certainly no argument in linguistic analysis, on its own understanding, could lead to a political position, either of ruler or of rebel.

This depoliticization of philosophy has been both gradual and a part of a more general process of division of intellectual labour. The seventeenth and eighteenth centuries saw crucial stages in this development, when the dominant aspect of the process was the creation of modern science as a specialized form of thought and knowledge distinct from (and potentially superior and hostile to) such other special fields as religion, philosophy, art, morals, and politics.

For Descartes at the beginning of this period, philosophy and science were hardly distinguishable. At the end of the seventeenth century Locke humbly described himself as "an underlabourer in clearing ground a little, and removing some of the rubbish that lies in the way to knowledge", knowledge in this context being represented as the achievement of such "master-builders" as Boyle, Sydenham, Huygenius, and "the incomparable Mr Newton".

And at the self-conscious culmination of the Enlightenment, Kant conceived philosophy as a special type of inquiry logically different from science but involving the justification of scientific categories and modes of reasoning.

Though at this time the theory of knowledge, with knowledge construed on the paradigm of science, was becoming the focus of philosophical inquiry, philosophy was still capable of close internal connexion with politics through the sub-discipline known as political philosophy.

Locke's political philosophy, as we all know, was a powerful influence in the Enlightenment, and that and the political philosophy of Rousseau in various ways helped to prepare the ground for that radical critique of society that led to the French Revolution.

But the analytical movement's "revolution in philosophy" in the twentieth century sought to put a stop to all that nonsense. Political philosophy was declared dead, and in its place stood two logically different disciplines, the non-philosophical subject of political science and the philosophical subject constituted as the analysis of "the vocabulary of politics".

The place they stood in was drastically reshaped, both being conceived as apolitical, as neutral with respect to substantive political disputes. By the same process the analytical movement, born in opposition to Hegelianism, isolated itself from the main currents of twentieth century Continental philosophy and assumed its specifically Anglo-Saxon form.

To understand this transformation in philosophy and its relation to other intellectual activities we need to recognize a further crucial aspect of the connexion between philosophy and education. I have already mentioned the general connexion between intellectuality and education, the institutionalization of education being one of the main social forms of intellectual specialization.

But among those intellectual activities, philosophy has a particular role. It is not merely one specialism among others. Its specialization precisely reflects specialization in general and the growth of intellectual specialisms in particular.

For the direction of philosophy's specialization has been towards its becoming more and more purely reflective of other intellectual activities. Thought reflects reality, and philosophy reflects thought: philosophy is self-reflection, the self-awareness of thought. Put another way, philosophy, especially as it realizes its modern dominant form as epistemology or theory of knowledge, is metathought, it seeks to represent and theorize all types of thought and knowledge, including itself, and their interrelations.

These representations and theories are themselves transmitted in the educational curriculum, where they turn up, institutionalized, in the form of distinctions between, for example, arts and science, natural science and social science, pure science and technology, philosophy and history, history and literary studies, and so on.

Every educational institution is in this sense a piece of applied though perhaps largely unconscious philosophy, and every comprehensive theory of knowledge reflects a compelling way of dividing up the curriculum. Though it's late in the educational day that philosophy arrives as an explicit subject in the curriculum, and then only for some students, a philosophy hidden in the structure of the curriculum itself is taught and learned by all from the beginning.

The general shrinking of philosophy's place on the intellectual map, involving its separation from politics, science, religion, morality and art, and its neutrality with respect to substantive disputes within these fields, is represented most strikingly in some of the ideas of the later Wittgenstein.

If Locke's underlabourer conception of philosophy is humble, Wittgenstein's conception seems positively humiliating: "My aim in philosophy is to show the fly the way out of the fly-bottle"; and "Philosophy may in no way interfere with the actual use of language; it can in the end only describe it . . . It leaves everything as it is".

Showing flies the way out of fly-bottles is not, of course, leaving everything as it is. But Wittgenstein's point is that the fly-bottles themselves are philosophical inventions, not genuine problems, "confusions which . . . arise when language is like an engine idling, not when it is doing work": "The real discovery is the one that makes me capable of stopping doing philosophy when I want to—the one that gives philosophy peace, so that it is no longer tormented by questions which bring *itself* in question".

On this view philosophers don't even interpret the world, much less change it: philosophy has no positive contribution to make to our knowledge and understanding, and even its negative and destructive role is directed at philosophy itself, which is "nothing but houses of cards".

A question worth asking is how philosophy under such an assumption as this could have expanded to its present size in higher education. It is a long way from being the only example of a discipline in which a reduction in intellectual scope has gone hand in hand with growth as a social reality.

At a very early stage of the scientific revolution the mechanical philosophy rigorously excluded from the new science much that had been included in the old, and in the process set in train that distinction of subjects that has helped to put science in its present position of cultural dominance.

But the scientific revolution was and was recognized as being also a social and political revolution, in which the social power of science in revolutionizing modes of thought and social institutions was apparent, celebrated by some and dreaded by others.

The restrictive conception of philosophy achieved by the twentieth century revolution in philosophy, on the contrary, seems to celebrate the new-found impotence of the subject. The fact is that these contrasts are opposite sides of one and the same coin, and that fact provides at least the beginning of an answer to our earlier question.

Philosophy reflects its own impotence by contrast with the real intellectual power it reflects as belonging to science. Science as paradigm of knowledge, meaningfulness, and rationality: these are fundamental themes of the analytical movement as of the mechanical philosophy and the philosophy of the Enlightenment.

It's no accident that in the analytical movement's view the history of modern European philosophy runs essentially from Descartes to Kant, re-emerging with Frege and Russell at the beginning of the twentieth century, and with first Hume and then Kant as its chief ancestral models.

But why has this particular bit of intellectual history repeated itself? The vital task that this phase of European philosophy performed in the seventeenth and eighteenth centuries was to help create and develop modern science: it refined and purified a certain mode of thought, distinguishing science from the various kinds of non-science and in the process tending to degrade the residue.

The intellectual arguments were a central ideological aspect of a radical social change, one which created, among other things, the first secular society in history. When the analytical movement, especially in its logical positivist form, revived the programme of eliminating metaphysics from science, why was it necessary to repeat the job?

Science was no longer a new-born infant requiring protection against a variety of hostile social forces, but on the contrary a cultural giant, well established in society, especially in that ideological power-centre, the education system, including even Oxford.

To that extent, the twentieth century analytical movement, particularly its branch in the philosophy of science, has unlike its earlier counterpart been conservative, a defence of, rather than an attack upon, the local establishment. It is not surprising that this apolitical philosophy, which "leaves everything as it is", should have waxed fat in our recent educational prosperity.

A qualification needs to be noted. Since the Enlightenment, the relation of science to society, vital enough in Galileo's time, has taken an important new turn. Besides the natural sciences we now have the sciences of society, the so-called social sciences. There, it might be argued, a deconstruction job has been necessary, to eradicate the irrationalism they absorbed from the romantic reaction into which they were born.

The depoliticization of political philosophy, in other words its supersession by political science and linguistic analysis of the vocabulary of politics, was conceived as an advance in rationality, a clarification of the relevant concepts and a due recognition of the logical limits of different types of argument.

This was the conception of rationality that began to take shape in the great philosophical disputes over and within the scientific revolution in the seventeenth century; its outlines were first accurately made explicit by Hume in the Enlightenment, and its full and detailed articulation was completed in the renaissance of formal logic and the philosophy of logic in the late nineteenth and early twentieth centuries.

One general aspect of this development that found a particular form in the supersession of political philosophy was the conception of reason as value-free or neutral, with its obvious implication for both science and philosophy as rational disciplines. The effect was not only to exclude political commitment from philosophy but also, in the process, to exclude philosophy from politics.

In practical terms, that meant "the end of ideology", the end of political disputes of a fundamental kind: in other words, consensus politics, with its presuppositions of a society that is pluralistic but politically not deeply divided.

Philosophy's conception of its own theoretical content in relation to other subjects is clearly not unconnected with its social role as a professional specialism within the education system of a liberal polity. In fact, this philosophy in a certain way expresses the ideal essence of liberalism as the politics of the apolitical. Liberalism's dominant values, freedom and toleration, are meta-values, neutral with respect to the options tolerated, the options between which freedom is allowed.

Ideally, as a political arrangement it actively intervenes only in extremity, only to resolve disputes to which it is not itself a party, and only by standing in a position of balance or moderation between the contending extremes. It sees itself as outside, detached from, the society it watches over. As the franchise has expanded, the conception of the political has dwindled.

A university that is a liberal university is also conceived as a university that is politicaly neutral, apolitical, its members enjoying the academic freedom to pursue research and develop teaching as they think fit, and the university itself officially recognizing only "educational" criteria in its formulation of policy.

It was, of course, this idea of the university that was attacked by the radical student movement of the late sixties. The effects of that movement continue to reverberate in a multitude of ways, some less obvious than others.

As radicals and liberals of an older generation sometimes nostalgically point out, their radical movement of the thirties attacked fascism chiefly abroad, not liberalism and liberal institutions at home. The sixties movement was indeed a different thing, in a different world, more philosophically self-reflective than its predecessor, not only based in the universities but focused sharply on that base.

Whatever the full explanation of the difference, at a superficial level the rationale of this change of direction was evident, however ignored or misrepresented by those serving opposed political interests: namely that universities and academic intellectuals, represented by their every-tower image as detached and apolitical, were deeply implicated in America's imperialist war in Vietnam.

It was no "extremist" but the liberal American senator William Fulbright (now OBE) who in 1968 criticized universities for failing to be "an effective counterweight to the military-industrial complex" and for having instead "joined the monolith".

Two more general aspects of this involvement were relevant. On the one hand, the military involvement of academia was a special case of a general tendency theoretically represented by sociologists as a change from industrial to post-industrial or technological society: in which theoretical knowledge, in other words science, becomes a crucial economic resource in the production of other commodities and thus itself an essential economic product, with its own manufacturing costs, mode of production, and price, a commodity produced and distributed chiefly by the education system.

On the other hand, America's war in Vietnam was also an ideological conflict between such a liberal post-industrial society and Third World communism, and thus between European ideologies one of which, Marxism, had been transformed by its growth in a traditionally non-European culture.

As intellectual centres, the universities had a natural and professional interest in this conflict between opposed modes of thought, a natural and professional interest reaching beyond the departments of politics, economics and sociology, to those of anthropology and religion.

And of philosophy? In its Anglo-Saxon form that could hardly illuminate the ideological conflict. On the contrary, it could at most be a weapon on the liberal side, the side of what it represented as "the open society", whose basically undogmatic scientific attitude and technological structure marked it, potentially at least, as an instantiation of rationality and the end of ideology.

Academia was thus involved as both interacting intellectual levels of the Vietnam war, in the provision both of positive knowledge, e.g. counter-insurgency research, and of ideology. Revealing this was itself an educational enterprise.

The student movement has been widely stigmatized as "irrationalist" and "romantic", and parts of it willingly accepted those characterizations. Fundamentally, however, what is attacked in attacking the universities is the conception of reason dominant in our society, more or less consciously instantiated at the intellectual level in the education system and explicitly reflected in academic philosophy.

Romantic irrationalism is not the only alternative; the other is a different conception of reason. Under this attack, then, will the history of philosophy continue to repeat itself, and having relived the themes of the Enlightenment in a changed society by resurrecting first Hume and then Kant as its paradigm authorities next revive Hegel?

Conceived in reaction against Hegelianism and in its progress submerging "that mighty thinker" in inaccessible obscurity, the analytical movement, for all its proved flexibility, could hardly survive such a reverse.

Whatever happens, as the owl of Minerva takes flight, after the academic and social struggles of the last decade, and in the continuing current social crisis which is also an intellectual crisis, the imperial peace established by the palace revolution in philosophy seems to be disintegrating, and the situation both philosophically and academically is as mixed as the metaphor.

This article is an extract from "Philosophy in Academia", published in the current issue of the Oxford Review of Education (Carfax Publishing Co, Haddon House, Dorchester-on-Thames, Oxford OX9 8JZ).

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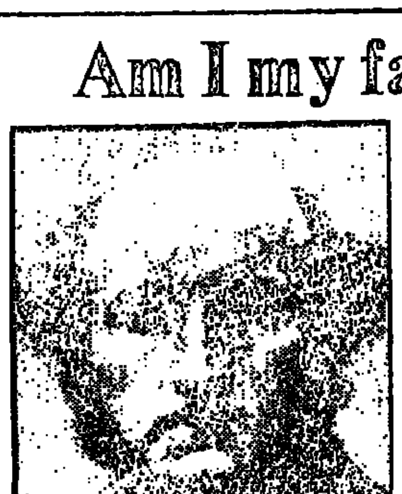
BOOKS

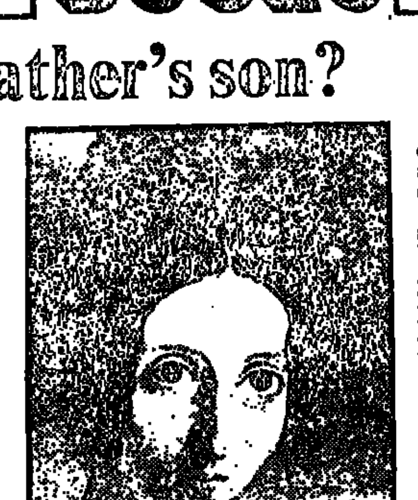
Am I my father's son?

On Liberty and Liberalism
by Gertrude Himmelfarb
Secker & Warburg, £4.90
ISBN 0 394 49028 2

James and John Stuart Mill
by Bruce Mazlish
Hutchinson, £6.50
ISBN 0 09 1243505



John Stuart Mill



Harriet Taylor

The great political philosophers did not leave behind texts whose meaning is obvious and beyond dispute. Hence the steady flow of competing interpretations of, say, Hobbes or Rousseau or Mill. And the interpreters support their claims not only by emphasizing these rather than those passages in the texts, but frequently go outside the texts and cite certain biographical details or point to some aspects of the intellectual scene to which a particular thinker belonged. So when we are offered an additional perspective from which to view a thinker there ought, on the face of it, to be a general welcome for the newcomer. But this has not been the way psycho-history has been greeted in Britain, whether its efforts have been directed to either the great actors or the great thinkers in politics. Scepticism, if not outright hostility, is the common response and this derives in part from a disbelief in the claims of psychoanalysis—as compared with conventional biography—but also from a fear that it serves, in this sphere at least, a merely negative and reductionist purpose, i e, that the question of the truth or validity of a philosopher's argument gets lost in the business of showing how certain ideas "correspond to", or are a "good fit for", his personality structure.

Now, John Stuart Mill would seem to be a test case for assessing the value of psycho-history in the field of philosophy. He told the world in his *Autobiography* how he came to lose his faith in Benthamite orthodoxy and how during and after a period of "mental crisis" he absorbed new intellectual currents and went on to produce what many consider to be a revised form of utilitarianism. That Mill's "mental crisis" played a crucial role in the development of his moral and political philosophy is scarcely open to doubt, and general studies of his thought usually acknowledge this fact. But there are aspects of Mill's own account of the crisis which seem virtually to lay him out on the couch ready for the analyst; the effect of a passage in Marmontel's *Mémoires* in lightening his burden being perhaps the most dramatic example. (Though Professor Himmelfarb is no psycho-historian she emphasizes "the momentousness" of the crisis and refers to "the classical Oedipal situation" in connexion with the Marmontel episode.)

Let us simplify a little and say that before his mental crisis Mill was single-minded in his philosophical beliefs but that afterwards he became, to use one of his own expressions, "many-sided"; so much so that he has often been charged with inconsistency, of shifting back and forth between two or more incompatible positions. More charitable commentators prefer to say that there are "tensions" in his thought brought about by the clash between his Benthamite inheritance and the new ideas he took up at the time of the mental crisis.

Himmelfarb's book centres on what she contends is a major conflict in Mill's thought, namely, the difference between the kind of liberalism we find in *On Liberty* and that manifested in his other writings; and I suppose the conflict she claims to find can in turn be related to the clash between his original and acquired opinions.

If there are these conflicts or tensions in Mill's thought should we be satisfied just to record them? Or must we try to explain them, and what sort of explanation should we seek? Consider the problem of free will *v*, determinism. Mill was clearly attracted to both positions. On the one hand he believed that all phenomena, including the thoughts and actions of human beings, were law-governed; on the other hand he was drawn to the idea of self-development (which plays a key role in the essay *On Liberty*), but this idea surely required that we have, as he put it, "real power over the formation of our own character". The solution he adopted allowed for the truth of both doctrines. We can make our own characters, *if we wish*. My wishing it to be so is one of the circumstances which shape my character. Hence it remains true that a man's character is formed by his circumstances. This account, however, presents the matter as if it were a purely philosophical one. Now, Professor Mazlish, whose concern with Mill is part of the wider problem of generational conflict, is far from wishing to deny the importance of philosophical inquiry or to "reduce" it to psychology.

Indeed he is so unimpressed with Mill's solution to the *philosophical* dilemma that he says of it that it enabled Mill "to have his cake and eat it". Such a remark would only make sense if one acknowledges that there are good and bad *philosophical* arguments. Nevertheless, Mazlish does contend that the free-will problem had a very special importance for Mill and that the psycho-historian, in contrast to conventional biography, has a better way of showing why, in his case, a genuine philosophical dilemma was also an acutely personal one. When Mill was wrestling with the issue of liberty *v* necessity, says Mazlish, he was "struggling in highly abstract terms with the powerful emotions which were constricting his own most intimate life". And, of course, he is able to quote from that part of the *Autobiography* where Mill describes his mental crisis and refers to the doctrine of necessity as weighing "like an incubus on my existence. I felt as if I was the helpless slave of antecedent circumstances . . .".

Mazlish's case, however, is more specific than the mere assertion that there were powerful emotions at work in Mill's philosophical tussles. What depressed him about the doctrine of necessity was not only its general significance for personal development but his feeling that he had been *made*, "completely determined", by his father. So, argues Mazlish, "only by vindicating the possibility of free-will . . . could Mill explain and justify his own assertion of independence." But he hastens to add, the relationship he is positing between the emotions and the intellect is one of "correspondence" rather than casual determination. Here, as elsewhere, he is keen to rebut the charge of reductionism.

Mazlish agrees, then, with the oft-stated view that there are tensions and conflicts in Mill's thought and he supplements the orthodox "explanation", of a clash between his Benthamite inheritance and the new ideas he took up from the time of his mental crisis, with a thesis in psychoanalytic terms as to why he was so receptive to the new ideas and yet never wholly abandoned the old ones. The mental crisis was for Mill a declaration of independence from a father who had dominated his life up to that stage. The tensions and conflicts in his thought are a sign that he never succeeded in completely escaping from his father. Whether it was the conflict between the "rational" and the "irrational", "reason" and "custom" or the "mechanical" and the "organic"; in each case the opposing concepts represent the dependent and independent phases of Mill's life, but having achieved his independence they continued to jostle in his mind and express the tug in his emotions. This, of course, is just the bare outline of a lengthy and detailed analysis. At the end of his book Mazlish says that what counts is the detail, "the building up of the fragments into a coherent picture, rather than any generalized statement, such as 'John Stuart Mill had an Oedipus complex'."

For another psycho-historian the detail would clearly be vital. There must be shared criteria for deciding whether the details support the conclusions or whether the evidence can bear the interpretation put on it, as in the example of the loss of Mill's watch in 1822, i e, four years before the onset of the mental crisis ("In 'losing' his watch John was unconsciously rebelling against his father's rigid control"). These matters are not taken up here, though it is mainly by reference to them that Mazlish would want his book to be judged. Nor shall I presume to pass judgment on psycho-history as a discipline, far less on psychoanalysis. But what I do feel confident in saying is that our understanding of Mill's philosophy has not been significantly enlarged, nor has the debate over its merits been appreciably advanced, by Mazlish's study. The most that could be said for it in these respects is that it confirms and supports judgments about the nature of Mill's thought—its tension, ambivalences and vacillations—which the conventional methods of intellectual history have already produced. Perhaps here and there Mazlish has highlighted the role that conflicting concepts played in Mill's thinking and if careful scrutiny of the texts bears out some of his suggestions that would certainly add to our understanding. But, on the debit side, there is an almost total neglect of Mill's ethical writings and a rather feeble discussion of the essay *On Liberty*, surely a decisive text for the thesis that Mill's thought was shaped by the struggle to free himself from his father's chains.

On Liberty, however, raises another problem—the influence of Harriet Taylor. Harriet's role in the writing of *On Liberty* is much disputed. It is surprising that both Himmelfarb and Mazlish ignore some of the most important scholarly work on the question of Harriet's contribution to Mill's writings. However, they agree in giving her much of the credit for an essay which has been commonly thought to be either wholly or overwhelmingly Mill's. Mazlish claims that she caused Mill "to emphasize the 'romantic', expansive strain in his views, and to strike 'strong' poses not generally natural or congenial to him". This is close to Himmelfarb's view, though he proceeds to water it down considerably with these qualifying words: "The themes are Mill's . . . the arguments and the writing are overwhelmingly his contribution".

Himmelfarb propounds one of several possible versions of the "two Mills" doctrine and Harriet Taylor's role is central to her argument. Her thesis is that the conception of freedom, and of its proper limits, set out in the famous essay is at odds with what Mill says about the subject in most of his other writings. The idea of liberty championed by modern liberals, she believes, derives from the Mill of *On Liberty* and since it is, in her view, a harmful one we should do well if we paid more heed to "the other Mill". Amongst other things, the modern liberal refuses to control manifestations of evil because of his dedication to liberty and it is the "absolute" nature of Mill's doctrine which condones such excess. Now since Himmelfarb holds that Harriet's influence was decisive over the Mill of *On Liberty*, her argument seems to generate an air of paradox. On the one hand Harriet's claim to distinction gets a powerful boost: she shares with Mill the authorship of one of the great classics of political thought. On the other hand, it was she who led Mill astray and induced him to advocate a theory of liberty which, in effect, makes her the villain of the piece.

I have doubts about Himmelfarb's thesis but they do not amount to anything like a firm conviction that she is wholly wrong. Despite my reservations, I feel there may be some truth in her case; certainly for Mill scholars her book is one to be reckoned with. My doubts arise on three counts. I think she overstates Harriet Taylor's influence; she exaggerates the contrast between the "two Mills"; and she is confused over the so-called "absolute" nature of Mill's doctrine. I cannot go into detail over Harriet's role, but if I am right about the second and third counts it would seem to follow that Harriet's part in *On Liberty* must be smaller than Himmelfarb maintains.

Among the writings of "the other Mill" Himmelfarb includes the *Political Economy*. In the fifth book Mill discusses "the influence of government" and several of the main ideas of *On Liberty* are clearly stated there. In particular the principle of liberty, to which Himmelfarb objects because it is "absolute", is formulated in terms closely similar to those used in *On Liberty*, even down to the idea of conduct which is "injurious" or a phrase like, "conduct which affects the interest of others". Furthermore, the wording of this part of the *Political Economy* remained the same from the first edition of 1848 up to (and including) the seventh edition of 1871, despite the fact that other parts of the work were substantially revised. This needs to be said because Himmelfarb thinks it important that *On Liberty* was composed at a time (1854-1858) when Mill and Harriet were living together and were able to give it their close and common attention.

The question whether Mill's principle is "absolute" is different from that of its being "simple" and also from that of its having to be applied to a variety of problems. At times Himmelfarb seems to run these together. I agree with her that Mill's principle is anything but "simple" and recent attempts to intrepret the principle (e g, by Brown, McCloskey, Ten and Wollheim), which she shows no sign of having taken into consideration, combine to show that it is neither simple to state nor simple to apply. As to its being "absolute", the sense in which *On Liberty* is at odds with the "other Mill" on this score eludes me.

What is the crucial difference between Mill's saying in the *Political Economy* that individuality ought to "reign uncontrolled" and to be "sacred from authoritative intrusion" so long as the interests of others are not affected, or so long as there are no injurious consequences to others, and saying in *On Liberty* that the only conduct for which an individual should be accountable is that which causes harm to others, that in regard to conduct which "merely concerns himself" the individual has an "absolute" independence? Himmelfarb thinks that when Mill uses the word "absolute", and also says that his principle is to "govern absolutely" social control over the individual, he has changed the character of the principle. But in what way? In both works Mill makes it quite clear that liberty is not, literally, "absolute"; that there *are* grounds for social control. In both works he leaves much to be inferred as to what "harm" and "affecting the interests of others" rule out. And in both works he appears to be inconsistent in allowing exceptions to the principle when he says, in the one case, that it is to apply "absolutely" and, in the other case, that "the circle around every individual human being" should never be overstepped unless the interests of others are harmfully affected.

John C. Rees

Tinged with practicality

Philosophers Discuss Education
edited by S. C. Brown
Macmillan, £9.00
SBN 333 18108 5

The 1973 Exeter conference, at which the papers in this collection were delivered, quickly became famous as the scene of R. K. Elliott's devastating attempt to undermine Professor P. H. Hirst's influential thesis that a liberal education is an induction into a limited number of "forms of knowledge". Elliott champions the unfashionable alternative that one function of education is to develop general powers of the mind, arguing also that the concept of a "form of knowledge" is ambiguous and that Hirst's recommendation is too narrow as an educational aim, too restrictive of a pupil's intellectual vitality and creativity. S. G. Langford and Hirst, in reply, are not impressed by Elliott's talk of "developing the Understanding" but Langford, at least, shares his worries over the "forms".

For readers interested in central themes in contemporary philosophy of education these particular essays and replies will be the highlight of the collection. There is plenty to choose from, too, as one might expect from participants of this calibre (mainly "pure" philosophers by title, but including the four leading philosophers of education in the country). Readers of *The THES* should enjoy the confrontation between S. C. Brown, A. P. Griffiths and R. S. Peters on the nature of the right to academic freedom. The topical points with which Griffiths follows his analysis—on the essential role of universities as research rather than teaching institutions, on students' rights to hold political meetings on the campus or to run universities—will be welcome to some, anathema to others. On the neutrality of the teacher, a topic often connected with academic freedom, neither Mary Warnock nor Richard Norman believe in its existence, although Norman goes further in his demand for overt political commitment. Freedom crops up in a different form in the Dearden - Telfer symposium on autonomy. As with neutrality, while appreciating the lucidity of the arguments in detail, one feels a very slight disappointment here, partly owing to previous over-exposure to the main issues, partly to the lack of significant confrontation between the speakers. There is confrontation all right between Cooper and O'Hagan on equality *v*. quality, Cooper arguing for the precedence of the latter and O'Hagan for their compatibility; but this session falls a bit flat owing to some easy targets in Cooper's opener.

How far do the participants share the hope that philosophy of education, through just such enterprises as this conference, will become a recognized branch of philosophy comparable with, say, philosophy of science or aesthetics? There are only two explicit comments. Mary Warnock feels obliged to apologize for her emphasis on practical and empirical, rather than philosophical questions, but finds this typical, in any case, of the philosophy of education. Griffiths admits to no more than the possibility of a "tinge" of philosophy in some of his spirited comments on the role of universities. "Philosophers discuss education." Maybe. But do they always do it here as philosophers? And if they do so sometimes, do they do it as philosophers of education, or as (for instance) thinkers in the field of ethics or political philosophy like Hare and Montefiore? The old question is still with us. Elliott wants creative pupils, Dearden autonomous ones; Norman wants overtly politically committed teachers. Do we move at points like this away from philosophy as a mode of understanding reality and into a species of moralizing? Possibly we do. But as John Benson reminded us some years ago, philosophers are in a better position than many to see that such practical questions are discussed with lucidity and attentiveness to the presuppositions and validity of an argument. These virtues are greatly in evidence here.

J. P. White

Picture poetry

Landscape and Inscape: Vision and Inspiration in Hopkins's Poetry
by Peter Milward SJ and Raymond Schoder SJ
Elek, £6.00
ISBN 0 236 40000 2

Peter Milward and Raymond Schoder are Jesuit priests and writers who share a dedicated love for G. M. Hopkins. They have had the novel idea of collaborating in a book in which Fr Schoder's photographs accompany detailed commentaries on selected poems of Hopkins by Fr Milward. Fr Schoder is, it is clear, a skilled and imaginative photographer; and he has put together a superb collection of 70 colour photographs, mostly of objects and places that went into Hopkins's poems. Fr Milward is an experienced and sensitive interpreter of Hopkins's poetry, with a deep conviction of its spiritual interconnectedness, and a keen ear for Hopkins's language and his "underthought" (to use Hopkins's own word), particularly of Shakespeare's plays.

The result of their collaboration is a remarkably handsome book that should certainly appeal to lovers of Hopkins. But the authors have clearly aimed to achieve more. Do the photographs, as the blurb claims, bring out the meaning of the poems more richly?

Undoubtedly many of them do. Hopkins observed both the vastnesses and the *minutiae* of nature with unusual intensity—the latter with unusual knowledge and exactitude.

The camera gives both a new visual dimension. There are exciting photographs of Inversnaid's "wiry heathpacks, flitches of fern", taken on the spot; poignant ones of the fretty chervil of "Thou art indeed just, Lord"; and a splendid windhover (though it is sad to know that it is stuffed and that Hopkins's title may have come from it). And there are beautiful skyscapes and "hillscapes", to go with "The Wreck of the Deutschland" and "Hurrahing in Harvest" and "Spelt from Sybil's Leaves". But interesting — associationally — as some of the others may be, Hopkins's own drawings (of which three are reproduced here) surely say even more about his poetic practice. How much, the recent Sunderland Arts Centre exhibition, "The Visual World of Hopkins", showed in fascinating detail.

Much of the book's delight comes from what it reveals of Hopkins's unique sense of place. Here, above all, is the "instress of Wales": the hills near St Beuno's ("flanks of the voel") that gave a key image to stanza four of "The Wreck of the Deutschland"; the valley of the Elwy that inspired the sad contrast of that poem; the "azurous hung hills" of "Hurrahing in Harvest". "Pied Beauty" rightly earns two pages of illustrations. It also gains from Fr Milward's pointing to the two Jesuit mottoes (*Ad Majorem Dei Gloriam* and *Laus Semper Deo*) that, at beginning and end, hold its dappledness in place.

But it is important to remember that Hopkins searched passionately, and all his life, for "laws" too: for the law of the chestnut-leaf, in his essay "The Origin of Beauty"; for "the law of the oak", the laws of clouds, of waves and even of "the crowd" (in the Sheldonian at Oxford)—all noted in his Journal.

The limitation to the collaborators' method comes from Hopkins himself. "Spelt from Sybil's Leaves" apart, there is no separate section on the "dark"—and great—sonnets written in Dublin. There obviously could not be. "There is", as Fr Milward says, "little or nothing in them that lends itself to visual illustration". That is the tragedy of a poet who so delighted in "dappled things", that "Spelt from Sybil's Leaves" records; and that the sonnets, "written in blood", chart so painfully. Fr Milward does not, of course, ignore this sense of closing in; of life's "once skeined stained veined variety" being reduced to "two folds—black, white; right, wrong". But, by emphasizing it as warning of "punishment" to come, rather than as *immediate*—and terrible—pain, he lessens, I think, one important truth about Hopkins that this book—at any rate for me—inevitably makes. But to the other no less important truths—the "pied beauty" and grandeur of the "bright" sonnets, and the drama and agony of the two great "Wreck" poems—both text and photographs bear eloquent witness.

Graham Storey

Platonic errors

The Christian Revolutionary: John Milton
by Hugh M. Richmond
University of California Press, £4.40
ISBN 0 520 02443 5

Hugh Richmond's book is both a "thesis" and a biographical or "contextual" reading of Milton's writings. Its "thesis", referring its origins to Karl Popper's *The Open Society and Its Enemies* and Anders Nygren's *Agape and Eros*, entails a censure of the "humanistic tradition" and "the Platonic cult of the intellect for its own sake", and seeks to show that Milton's early Platonic idealism was "a costly error both to his life and his art". The spectacular failure of his political idealism and his apparently total defeat at the Restoration marked a move in Milton towards an anti-intellectual, pragmatic response to human fallibility which could reject Greece and Rome and affirm Christian acquiescence; in the "final and exemplary state of mind" of the later works it is Milton's "unique blend of a tolerant but wholly disillusioned acceptance of human fallibility with a startling trust in an ultimately benevolent providence which seems likely to prove most valuable to the disoriented modern mind."

The "dislocations of the twentieth century" are never far from the surface. A discussion of *Paradise Regained* is shot through with references to Dr Gallup, Ho Chi Minh, and Scott Fitzgerald as well as Plato, Tiberius and St Paul. The "thesis" brings in some harsh judgments on Milton's early career: *Comus* is an idealistic excursion barely rescued from total Platonic smugness, and the Lady's virtues have very little to do with Christianity; *Of Education* is "an arrogant piece of Platonizing in which the human mind is optimistically (not to say ludicrously) conceived as capable of assimilating any and all disciplines"; the *Apology for Smectymnuus* is naive in the extreme; and the bizarre *Lycidas* shows "a provocative self-confidence that positively invites disaster". He expresses himself forcefully, but neither, despite the occasional polemical and generalizing tone (Christians like Cromwell, Newton and Pascal are better than Platonists like Ficino, Henry More and Spinoza) is subtle and illuminating criticism lacking. The book's great strength lies in its pungent yet lucid expositions of the poetry, to which the "thesis" of a Milton coming through a frigid Platonic Christianity to a final position in which faith and grace, not learning and knowledge, are paramount, lends a sharpened edge.

The essay abounds in valuable insights, from the persuasive symbolic identification of Sabrina in *Comus*, the witty epigrammatism of "if Dante outlines the techniques for success in a kind of cosmic social climbing, Milton's *Paradise Lost* by contrast is essentially the Anatomy of Failure", to the ingenious para-psychiatric investigation of the protagonists of *Paradise Lost* which can translate Satan as "the principle of self-esteem of the Platonic Ideal contemplating itself to the exclusion of all else".

It is a quirky and original book, and its asides—for example, the uppercut implicitly offered to Stanley Fish and the "misleading . . . idea that Milton wrote his poem to purge his hearers of error: If God could not do this as Milton shows, what blasphemy would it be for Milton to expect to do better!"—are stimulating and subtle.

R. D. Bedford

BOOKS

A very provincial classic

The Classic
by Frank Kermode
Faber & Faber, £3.50
ISBN 0 571 10695 1

What, I wonder, did Professor Kermode's auditors at the University of Kent (where these T. S. Eliot Memorial Lectures were given) make of this sentence on page 108: "In such a book text and reality stand in no enantiomorphic relation"? The word "enantiomorphic" is not in the *Oxford English Dictionary*, nor can I find it in *Webster*. "Enantiomorphism" is defined in scientific dictionaries as "occurrence of substances in two crystalline forms, one being a mirror image of the other". To use "enantiomorphic" in a public lecture about cultural history (and these lectures are discursive meditations about the relation of culture to time and change, about the way self-conscious transmitters or interpreters or renovators of culture regard the deposits history leaves in the present) is to behave in a very non-classical way. So, in a somewhat different sense, did T. S. Eliot behave in a non-classical way when, as quoted by Professor Kermode, he defined "the classical moment" as "a moment of *stasis*, when the creative impulse finds a form which satisfies the best intellect of the time, a moment when a type is produced". Though innumerable critics (mostly American) since then have used "stasis" to mean roughly something like "stability" or even "stagnation", no one educated in the Latin and Greek classics would so use it: to such a person "stasis" means a condition of constant sedition or factiousness in a Greek city state, while to the pathologist it means a stoppage of the circulation of a body-fluid.

These are what Professor Kermode might call typological points. For they stand for a rather special kind of modern ambiguity in relation to the nature and status (which word, by the way, *is* the precise Latin form of the Greek "stasis") of the order of classical works of literature. Professor Kermode takes off from Eliot's essay "What is a Classic?", a late essay (1944) in which he moves up and down and in and out in a curious toing and froing manner before he decides that Virgil and Dante are classics because Dante presented Virgil as leading Europe "towards the Christian culture he [Virgil] could never know". This is a grossly unjust summary of Eliot's discussion, which makes many suggestive points by the way, but it will serve to point a paradox that lies at the heart of Eliot's cultural position and which emerges too, although in different ways, in Professor Kermode's meditations. The paradox is simply this: Eliot was passionate about what was central and what was heretical or eccentric in European culture, seeing Virgil and Dante as among the former and Blake and D. H. Lawrence as among the latter. Yet he himself, insistent though he was on the healthfulness, maturity and metropolitan non-provincialism of the great central writers, did not in his own work distinguish between what we might call the canon and the apocrypha.

In *La Figlia Che Piange* he quotes as epigraph from Book I of the *Aeneid*; in "Sweeney Erect" his epigraph comes from Beaumont and Fletcher's *The Maid's Tragedy*; "The Waste Land" is preceded by a quotation from the *Satyricon* of Petronius and includes among the passages it quotes, distorts or refers to, a most extraordinary range of works from Dante to Hermann Hesse and from F. H. Bradley to the Upanishads; "Mr Apollinax" has as epigraph a quotation from the little known *Zeuxis* by Lucian which Eliot had first found in an essay by Charles Whibley. The mental furniture Eliot draws on in his own poetry does not represent the contents of a classically furnished room but the wildly assorted and casually assembled stock of an eclectic secondhand furniture dealer or even owner of a junk shop. In this he showed himself a provincial (to use the category he used and Professor Kermode accepts), a man from Missouri overwhelmed by the richness and variety of Old World culture. And it was for this very reason that he worried so much about what was a classic and warned against cultural heresies. This is not, of course, to pass a judgment about the quality of his poetry; but it is to say something about the dilemma of modern man confronted with the culture of the past.

For the fact is that the high literary culture of the western world has not been transmitted to us, in the latter part of the twentieth century, any more than it was to the young Eliot in America, in a continuous line. It has long been the prerogative of scholars and experts, no longer part of "what every schoolboy knows", not even part of what every highly educated university student knows. It is now something to be recovered and explicated, not simply adapted and accommodated as it used to be. And this raises all sorts of questions about how we set about that recovery and explication and on what documents our recovering and explicating activities should be concentrated.

Professor Kermode would probably have written a more cogent and useful set of lectures if he had concentrated on this point. But he has been more ambitious than that—and more self-indulgent. The result is a set of wide-ranging meditations starting from Eliot's (and Sainte-Beuve's and Arnold's) view of Virgil as a classic, and the implications for cultural and general history and historiography of these views; going on to reflect on different seventeenth-century English approaches to ancient texts (those of Milton and Marvell, among others), moving to the American scene and discussing interestingly Hawthorne's presentation of the relationship between the New World and the Old, with some fine discriminating detail; and proceeding to discuss the implications of the different ways of interpreting *Wuthering Heights* before concluding with what most of us already knew or suspected: "The survival of the classic must . . . depend upon its possession of a surplus of signifier; as in *King Lear* or *Wuthering Heights* this may expose them to the charge of confusion, for they must always signify more than is needed by any one interpreter or any one generation of interpreters." He goes a long way round to reach that conclusion and covers some fascinating territory in the course of the journey. Reading and reflecting on these lectures in the study one finds them stimulating and rewarding, if occasionally irritating; but I doubt if many of his original auditors made much of them.

David Daiches

BOOKS

Forcible feeding in action. An artist's impression of forcible feeding, first published in the Illustrated London News, April 27, 1912. From Shoulder to Shoulder, by Midge Mackenzie, published by Allen Lane at £7.75.

More Marxmanship

The Political Ideas of Marx and Engels, volume 1 : Marxism and Totalitarian Democracy, 1818-1850
by Richard N. Hunt
Macmillan, £10.00
SBN 333 18578 1

Marx and Modern Social Theory
by Alan Swingewood
Macmillan, £4.95 and £2.05
SBN 333 17690 1 and 18278 2

Most of the literature on Marx is considerably more useful as an index of the political and ideological conflicts of our times than as a guide to Marxian theory. A generation ago, for instance, when the Cold War was at its height, a number of learned works appeared (Karl Popper's *Open Society and its Enemies*, Hannah Arendt's *Origins of Totalitarianism*, and J. L. Talmon's *Rise of Totalitarian Democracy* were the most prominent among them) which purported to show that Marx's theoretical work was nothing but totalitarian doctrine. The laboured intellectual genealogies these writers put forward (Marx was said to be the offspring of, respectively, Plato, Darwin and Rousseau) told us nothing illuminating about Marx, but they did exhibit the lengths to which some liberals would go in order to assimilate communism to Nazism, to saddle Marx with responsibility for the crimes of the Stalin era, and so to pronounce a blanket anathema on Marxism of every variety.

Today, in the wake of the would-be revolutionary events of the late sixties, we are getting books by reputable academics purporting to show that Marx alone was (and still is) right about every aspect of polity, economy and society. The dogmatic claims they advance tell us nothing illuminating about Marx, but they do let us know that some of yesterday's dogmatic student radicals have become today's equally dogmatic radical lecturers. One may record that the initiative in this ideological battle has shifted from the anti-Marxists to the pro-Marxists but, if one cares about the light that theory may shed on life, one is bound to record it with indifference, for this particular battle has shed none.

The two books mark the swing of the pendulum: while Professor Hunt is hard at work demolishing the "totalitarianism" thesis in its Talmonian version, Swingewood is busy setting up new intellectual barricades, pitting the infallible Marx against the whole of modern social theory.

Professor Talmon's thesis (in *The Rise of Totalitarian Democracy* and *Political Messianism*: *The Romantic Phase*) was that what he called "totalitarian democracy" had its roots in Rousseau's *Social Contract*. From Rousseau a very thick, very red line runs to Robespierre, on to Babeuf, and thence via Buonarotti and Blanqui to Marx; from Marx, of course, it runs straight on to Lenin, and finally to Stalin. Just as though the real past replicated the simple connexions among doctrines which hindsight and a little political animus can conspire to make,) Marx emerges from Talmon's pages as an advocate—on principle—of totalitarian dictatorship, conspiratorial and insurrectionary politics, and the systematic use of terror. Now there were indeed times and occasions when Marx, and Engels too, spoke of the dictatorship of the proletariat, called for the employment of terror, and made common cause with French Blanquists whose conspiratorial, elitist party aimed to "make" a revolution *for* the proletariat, despite the fact that their own theory seemed to require that the emancipation of the proletariat be the work of the proletariat itself. Talmon's thesis was therefore not wholly without foundation. But Talmon systematically neglected to ask the responsible historian's questions: when and why and to what extent did Marx and Engels move in this direction? How does the totalitarian moment relate to their work as a whole? Could it be that the totalitarian elements entered Marxism not as logical consequences flowing from theory but as political expedients embraced in moments of disheartening political experience?

It is these questions that Professor Hunt asks in *The Political Ideas of Marx and Engels*, and asks to devastating effect. He tests Talmon's thesis by means of a careful examination of the documentary evidence, by correlating Marx's and Engels' "totalitarian" pronouncements with the practical political situations in which they found themselves when they made them, and by comparing these occasional statements with the main thrust of their theoretical writings. He finds that Marx and Engels spoke of proletarian dictatorship, advocated the use of terror, and joined with a conspiratorial party only in the *aftermath* of occasions of revolutionary activity or, more precisely, in the aftermath of the *defeat* of revolutionary activity. They spoke of the need for red terror only *after* white terror had already decimated the ranks of the revolutionaries, they formed a common front with conspiratorial Blanquists only *after* counter-revolutionary repression had made open radical political activity impossible, in the periods 1849-52 and 1871-75. Only then, in the years 1890 to 1893, when Engels was trying to cope with the evolutionism and "revisionism" of the German Socialist Party, was there any talk of the "dictatorship of the proletariat".

Hunt finds that while "the *rule* of the proletariat was surely 'the very essence of Marx's teaching' . . . to label it 'dictatorship' was in truth little more [for Marx and Engels] than factional politics"—and, he might have added, to label it "totalitarian dictatorship" was little more (for Talmon) than unhistorically to foist on Marx and Engels a term whose twentieth-century connotations they would not have understood, though for Talmon's readers they could be expected to conjure up the most fearful images of oppression. He shows convincingly that Marx and Engels not only preached but practised internal party democracy, generally rejected conspiratorial tactics and strategies of minority revolution, and would normally have no truck with terror.

As a refutation of the "Marxism is totalitarianism" thesis, Hunt's book could scarcely be bettered (though it *could* be bettered: he works with too narrowly political a concept of revolution, isolates Marx's and Engels' political from their social and economic ideas, and repeats some familiar but not inconsequential errors, e.g., identifying *Stände* as "political *classes*"). As an analysis of the political ideas of Marx and Engels in its own right, however, the book leaves a good deal to be desired. Hunt has focused so sharply on the "totalitarianism" thesis that the wider aspects of Marxist political thought are treated cursorily or neglected altogether. We learn all too little about their theory (or theories) of the state and its disappearance *as such* in socialist, classless society; too little about the process of revolution as they conceived it; and next to nothing about the relation of political to social and economic processes. It is clearly a case of trying to do two jobs at once, and succeeding—though succeeding splendidly—at only one of them. But perhaps the second volume will deal with the larger topics in greater detail.

If Hunt's book is a model of careful and responsible scholarship, Swingewood's is, unhappily, a model (if that's the right word) of careless and irresponsible preaching. The tone is always passionate and authoritative, but what is said is often false, sometimes naïve, and generally superficial. For example, he makes the false statement that: "It should be noted that in Marx's many analyses of society and history he never made use of [the Hegelian] terms . . . affirmation, negation, and negation of the negation. . . ." A particularly famous passage of Marx's reads in part: ". . . capitalist production begets, with the inexorability of a law of Nature, its own negation. It is the negation of negation" (Marx, *Capital* I). A naïve statement is "*Praxis* means the class struggle: through this, man (i.e, the proletariat) changes himself and society . . ." But Marx's concept of *praxis* "means" very much more than just class struggle, while the process of change through *praxis* (sometimes called history) was going on long before the modern bourgeoisie brought the modern proletariat into existence.

The concept of contradiction is, as Swingewood rightly sees, a crucial one in Marx's social theory; yet he generally uses it as virtually synonymous with mere "conflict" or "antagonism". A thorough analysis and exposition of the concept of contradiction and of its practical applications in social inquiry is surely indispensable in a book which affirms the superiority of Marx's social theory to all of non-Marxian social theory. And yet one looks in vain for such an analysis in Swingewood's book. Indeed, one looks in vain for any detailed and reasoned exposition of the superiority of Marxian over non-Marxian concepts, for any precise account of just why and just how a Marxian analysis of social reality is a better analysis than a non-Marxian one. Or are we to take it that social research and inquiry are no longer needed; that, the Master having done all the hard empirical work, his findings are final, his concepts unassailable, and in need only of faithful application? The terrible simplifications of Swingewood's book are well expressed in one of his concluding statements: "Marxism . . . is pre-eminently a revolutionary social theory enriched by the *praxis* of the revolutionary party and the revolutionary working class, and international working class intellectual developed by revolutionary intellectuals." *One* class? *One* party? *One* praxis?

Heinz Lubasz

For necrologists?

Keen readers of *The Times* obituaries should find much to enjoy in a recent Newspaper Archive Developments publication, *Obituaries from The Times 1961-1970*, compiled by Frank C. Roberts at £27.50. In two parts, the book contains the obituaries of 1,500 people, selected for their public importance, their intrinsic interest and to reflect the wide range of the obituary column. The other part of the book comprises an index with 19,000 entries, covering all the people mentioned in the columns during the decade, whether by obituary notice, tribute from a reader or simply a record of death. It is, therefore, a valuable reference book of contemporary history as well as a necrologist's delight.

Rise of Hitler

Professor J. P. Stern's controversial and fascinating account of the rise of Hitler, *Hitler: The Führer and the People*, now appears in hardback published by Harvester Press in association with Fontana, price £6.50. The book was first published earlier this year as a Fontana original paperback (80p).

Qualification

The sixth annual edition of *British Qualifications* has just been published by Kogan Page at £8.50. The volume, lists the qualifications which can be obtained in Great Britain from secondary school, further education and higher education. It also includes those qualifications awarded by professional institutes and associations.

German words

Volume two of the new *Munn-Saunders Encyclopaedic Dictionary* completes the massive German-English dictionary produced under the editorial direction of Dr Otto Springer. It is published by Hodder & Stoughton at £30.00 and includes vocabulary, grammar, pronunciation, stress, and American English.

The third edition of *The Pocket Oxford German-English Dictionary* compiled by the late Dr M. A. Barker and Dr F. Hoffmeyer is just published at £2.50. The second edition of *The Pocket Oxford English-German Dictionary* is published simultaneously at £1.50 and the two bound together as *The Pocket Oxford . . . Dictionary* cost £3.25.

BOOKS

Life at sea

The Living Ocean
by E. J. Ferguson Wood
Croom Helm, £5.50
ISBN 0 85664 026 3

Ferguson Wood, professor of microbiology at the University of Miami, died in 1972 when much of his manuscript for this book was still only in draft form. This production, which had then a sad and unfortunate start, is the result of a difficult rescue operation, which has been only partially successful.

Originally an agricultural pathologist in Australia, Wood switched to the sea, and for the rest of his life studied marine microbiology, at most depths in nearly all the oceans of the world including the Antarctic. This enormous background of experience contributes greatly to the merits of the book.

The earlier and later chapters form the best parts of the book, which is divided into five sections: collecting information, the microbes of the sea, the physical world of the ocean, the inshore world, and marine life and man.

The opening chapter is an exciting account of life at sea in all weathers. The next describes sampling gear and methods—some illustrations of these would have been useful; there is one text figure but this is of a simple towner that might have been used at any time in the past 150 years, and having referred to it the author dismisses it as useless for the collecting of microorganisms.

The second part, the survey of Wood's "microbes", includes phytoplankton, protozoa, blue-green algae, fungi, bacteria and viruses. This seems a reasonable use of the word microbe, but I cannot accept his use of the term amoeba to include the radiolaria and foraminifera. It is a good survey and throughout the author emphasizes the ecological relationships, chemical, biological and temporal, between different members of each group and between the groups themselves.

The final section, on marine life and man, is also good, consisting of three short chapters on man's impact on marine life, on the impact of microbes on man-made things like ropes, wires, timber structures and even concrete, and on marine productivity and how to improve it, finishing with an excellent short review of mari-culture and fish-farming.

But the best part of the book is the fourth section, on the inshore world—estuaries and the continental shelf. Here Professor Wood goes in even greater detail into the ecological interrelationships of the micro-organisms, paying particular attention to the complicated biological processes that take place at the interface between the sediment and the seawater above it. Information, ideas, speculations and suggestions for future work fly off in all directions like a firework display.

However, this is a curate's egg of a book—some of the bad bits are in the middle section containing four short chapters on physical and chemical oceanography. Here there are several sentences which mean nothing until the reader mentally inserts a missing word or two and again more illustrations are needed: a description in a few lines of a phenomenon such as the Antarctic Convergence cannot mean much without a north-south cross-section.

John S. Colman

Solid-state physics

Solids: An Introduction
by A. Hart-Davis
McGraw-Hill, £2.95
ISBN 0 07 084058 X

Books on solid-state physics almost invariably occupy the largest space in the physics sections of university libraries. The reason is not far to seek. Of the three states of matter, the gaseous state was the first to succumb to theory, while the liquid state has hardly begun to do so. But the solid state started to make progress in the 1930s and after the war physicists began to make up for lost time; "Introductions to Solid-State Physics" came in a flood.

What then is the justification for yet another such book? The author decided to try to produce a book small enough and cheap enough to be bought by students; he would limit it to essentials and, by keeping to physical reasoning rather than mathematics, he would make it attractive to physicists and non-physicists alike.

Dr Hart-Davis has certainly produced a cheap book. It is attractively written; the use of the first and second persons gives the impression of personal contact—although the many short sentences make the text rather jerky. But on the whole he has not succeeded in achieving his aims. The book is not as non-mathematical as he claims; chapters two and six demand heavily on mathematics. In addition, one of the devices for keeping the book short is to refer the reader to other works for basic concepts such as Fermi-Dirac statistics, the Pauli exclusion principle, Fermi levels and the Bohr magneton. Fourier analysis (perhaps justifiably) and cyclotron resonance (not justifiably) are also introduced inadequately. These defects are particularly serious for the non-physicist who cannot be expected to have the background that the physicist has.

Another grave omission is a three-dimensional treatment of Brillouin zones. I am all for simplified introductions and it is a good idea to start this subject in one and two dimensions, but it is not possible, as the author admits, to explain the properties of metals without three-dimensional treatment. This must be the only textbook on solid-state physics that does not contain some drawings of simple Brillouin zones.

I am reluctantly forced to the conclusion that the book is not the breakthrough that the author claims it to be; "reluctantly" because I think that the idea was a good one, but it seems impossible to produce a book on this subject that is short, self-sufficient, and readily understandable by students of varied disciplines.

H. S. Lipson

First, draw a diagram

Electronic Integrated Circuits: Their Technology and Design
by J. Allison
McGraw-Hill, £3.95
ISBN 0 07 084051 2

The author aims to provide a simple readable introduction to the design and fabrication processes of integrated circuits suitable for post-graduates and final-year students of electronics. On the whole he appears to have been reasonably successful. His authoritative approach is readable, although in a few places the rapid presentation of facts and figures takes a little digesting, and the diagrams are clear and explicit, satisfactorily illustrating the text.

He begins with a description of the various types of circuit integration technique giving particular attention to the silicon planar, diffused, integrated circuit and the reasons for its use. The basic operations of this process, namely, silica preparation, diffusion, epitaxy and window preparation, are described in detail.

The components, including the various forms of field-effect transistors, that are available to the designer as a result of using this technology, are then described together with a discussion of their properties and design parameters. The problems and methods of electrical isolation and packaging are described in the penultimate chapter and the book concludes with a chapter that is concerned with introducing the design of digital, linear and charge coupled integrated circuits.

B. A. Gregory

For crystals

Surface Physics
by M. Prutton
Clarendon Press: Oxford University Press, £2.75
ISBN 0 19 851819 6

The past 10 years have seen a remarkable growth in research into, and understanding of, the atomic structure, composition and properties of crystal surfaces. Although the importance of the free surface in determining the physical and chemical properties of solids has long been recognized it is only now, following advances in ultra-high vacuum technology that crystal surfaces with a reproducible structure and composition can be prepared and maintained in a stable condition for vigorous experimental study. A whole galaxy of new methods for probing and defining surface structures has emerged to yield precise information about the positions of individual atoms and the distribution and behaviour of their constituent electrons in the vicinity of a surface. A monograph such as this one by Dr Prutton is therefore both timely and useful.

It is timely because it tells us why a knowledge of surface structure and surface activity is so important within the broad perspective of applied science. In his admirable introduction the author explains not only why the free surface is interesting for the physicist but also why an understanding of surface behaviour is of paramount importance in thermionic emission, crystal growth, chemical catalysis, the fracture of solid materials, and the corrosion of metals. There are also two very good chapters describing the major techniques and methods of analysis now available to the surface scientist.

It is useful because it shows the student how the surface scientist is now beginning to understand the properties of surfaces. The last three chapters deal with the electronic behaviour of surfaces, the motion of atoms in a free surface and the interaction of a clean surface with a gaseous environment. The author illustrates the successes now being achieved by reference to a number of specific problems in these areas.

Though aimed particularly at the final year undergraduate who is perhaps reading a special option in surface physics, the book provides a good introduction also for the research worker just entering this field of study. As one might expect from Dr Prutton, the subject is viewed from the point of view of an experimentalist who asks the right questions and then does careful experiments to answer them. This makes excellent material for the student. The book is very readable and I am sure it will be enjoyed by more experienced readers also. My only criticism is that it does not go far enough into the many interesting problems it introduces. It could have been twice as long.

A. J. Forty

Reviewers

R. D. Bedford is a lecturer in English at the University of Exeter; Tim Benton lectures in the history of art at the Open University; Bernard Capp is author of The Fifth Monarchy Men; John S. Colman has written The Sea and its Mysteries and has recently retired as director of the University of Liverpool's biological station at Port Erin; David Daiches is professor of English at the University of Sussex; B. A. Gregory is author of An Introduction to Electrical Instrumentation and is a senior lecturer at Brighton Polytechnic; David Husain is a fellow of Pembroke College, Cambridge, and lectures in physical chemistry; Heinz Lubasz is in the department of history at the University of Essex; R. A. Markus is reader in medieval history at the University of Liverpool; John C. Rees is reader in political theory at University College of Swansea; his publications include Mill and his Early Critics and Equality; J. P. White lectures in the philosophy of education at the London Institute of Education.

Not all smog and pollution

Chemistry of the Atmosphere
by Murray J. McEwan and Leon F. Phillips
Edward Arnold, £9.75
ISBN 0 7131 2477 6

The chemistry of the atmosphere is a particularly difficult subject on which to write a comprehensive book for two major reasons. First, the subject can be regarded as an applied science and requires the serious application at a relatively sophisticated level of a variety of disciplines, including reaction kinetics, photochemistry, spectroscopy, collisional processes and various aspects of basic physics. Second, atmospheric chemistry is of considerable topical interest for obvious reasons and enjoys major financing at the research level in the United States. The result is a huge output of research papers and a field that is continually being modified, and in which even review articles in the scientific literature are out of date by the time they are published. There has been the need for a book of this type as opposed to a collection of specialist review articles by different authors.

After a brief introductory chapter on the general characteristics of the atmosphere, the authors consider the atmosphere as a photochemical system. Beginning with a treatment of light absorption at different heights above the earth and the sun as an emitting source, there follows what is effectively a compilation of light absorption by numerous molecules of atmospheric importance in this context. The background knowledge required is immediately apparent from these early chapters and clearly supposes a good understanding of spectroscopy and photochemistry, which is reasonable, as the book is intended for advanced undergraduate or graduate courses.

It is because Professor Phillips is so distinguished for his many measurements on atmospheric processes that I found the chapter on experimental methods disappointing. The authors quite rightly emphasize laboratory techniques. Perhaps more attention could have been devoted to a consideration of material required for understanding the nature of rate measurements for a number of transient species which are important in atmospheric chemistry and whose reactions are discussed in detail and at length in the ensuing chapters of this book. It must be presumed that the reader will refer immediately to the literature, which is referenced at the end of each chapter.

The main part of the book contains chapters on the different regions of the atmosphere, with detailed discussion of the large body of information of both the collisional and radiative types which is now available, and how suitable models, generally very complex, can be constructed to account for the detailed composition and behaviour of the atmospheric regimes. Here the authors, again quite rightly, indicate quantitatively the importance of physical transport, eg, diffusional processes, but in view of our ignorance of this branch of the subject in this context, deal principally with photochemistry and chemical kinetics. While the relevant rate data appropriate to these models will be continually updated, indeed some of the rate data quoted is certainly outdated, these sections will be very useful. There are also useful treatments of photochemical smog, pollution of the stratosphere and the chemistry of the atmospheres of other planets such as Venus, Mars and Jupiter.

David Husain

BOOKS

The edifice tells all

The Architectural Interpretation of History
by John Gloag
A. & C. Black, £8.50
ISBN 0 7136 1559 1

John Gloag has devoted much of his career to the history of design and attempts to reform industrial design in the twentieth century. *The Architectural Interpretation of History* represents another side of his interests—archaeology and the history of architecture. The book is based on the study of buildings through the ages as evidence of the character of succeeding civilizations—evidence which is so often more potent and poignant than any documentary records. In format, the book consists of a series of case studies into the buildings of the past, working through from the Egyptians to the present day.

In each chapter, Gloag summarizes the quality of the civilization from the evidence of its remains, showing how the thinking eye can interpret subtle cultural differences in the varying forms of architectural detailing and construction. The fixed repetitive canons of Egyptian society are reflected in the refusal to make use of new structural developments, such as the arch, which was used only in a subsidiary way. On the other hand, the practical efficiency of the Romans, and their desire for dramatic and autocratic monuments allowed them the greatest freedom to develop radical new structural devices, in order to build high and vast. Similarly, the effect of medieval warmongering, with its scent of fear, but also the close social ties between lord and vassal, is traced on the architecture of the Romanesque and Gothic styles. As a historical framework, Gloag makes extensive use of the panoramic table of civilizations in *The Revolutions of Civilization* by W. M. Flinders Petrie (1922).

Although Gloag's scholarship is up to date and deep, the style betrays the generalizing attitude of the Petrie or Toynbee generation. The aim is always to draw the general historical lesson, with an eye to present-day predicaments. It is a criticism of much contemporary historical writing that authors are reluctant to draw attention to the contemporary relevance of what is being studied. Gloag has reached the confident stage of one who has seen much and pondered deeply, and is ready to pass on his conclusions. Consequently, interspersed with the detailed description of buildings and periods of history, we find a framework of critical and evaluative commentary (often in the form of asides) which draws general conclusions and makes comparisons with contemporary building and society. For instance, the slow rebuilding of London after the blitz is compared unfavourably with the resolution and ingenuity of Wren's reconstruction after the great fire of 1666:

> When such delays are prolonged, the civilisation that is resigned to living in ruins may be on its way out or in process of drastically changing its character.

The book reveals Gloag as an extensive traveller, who has looked long at the buildings and remains of Europe. His descriptions are vivid and perceptive. He takes the trouble to set buildings into their proper context, aware of the dangers of false interpretation when incomplete fragments are studied in isolation. The book is plentifully illustrated with line drawings, by Hulme Chadwick, Maureen Stafford and Raymond McGrath (among others), and there is a section of photographs at the end. One criticism of the book, for those who have not seen all the ruins and buildings discussed, is that the author relies heavily on his verbal descriptions, rather than making precise and direct use of the illustrations.

In the later portions of the book, Gloag finds himself in something of a quandary on the issue of conservation. As a committed "modernist" (albeit a moderate one), he deplores the "nostalgia" for the forms of the past and the failure to create the new forms appropriate to new conditions. But at the same time, as archaeologist and historian, he sees evidence of declining standards of craftsmanship and the end of the organic relationship between buildings and society. He attacks most post-war architecture as inhumane and fatally contaminated by what he calls "social engineering" — the use of planning by architects to try to force people to live in new, programmed and unaccustomed ways. If we understood history better, suggests Gloag, we would not rely slavishly on the external forms of a nostalgically remembered past in a sequence of fashionable "revivals". But neither would we cut off our roots in the traditional skills and practices of the local builder and craftsman. A healthy society is one which can face up to the need for change but which can learn from the past and continue the best of the old.

The Architectural Interpretation of History, then, serves two main functions. There is a beautifully written and scholarly introduction to the architecture of Europe, mixing detailed observation with panoramic generalization. And there is a framework of critical analysis aimed at present-day attitudes, drawing the moral for contemporary architects and planners. Let us hope that the moral is learned and that the effect is to instruct as well as delight the reader.

Tim Benton

Church rifts

Jerome: His Life, Writings and Controversies
by J. N. D. Kelly
Duckworth, £10.00
ISBN 0 7156 0800 2

The last decades of the fourth century and the first decade of the fifth century raised problems which were new for the Christian Church. In the course of the fourth century Christianity had become accepted by the Roman establishment and Christians, in turn, had come to accept the values, the culture and the structures of late Roman society. The era of the persecutions and of the martyrs, the pre-Constantinian world of Christian witness being borne by a suspect and often unpopular minority, were becoming a distant recollection. The new problems arose from the Church's very rapid assimilation of, and assimilation by, the secular world and its culture. What was the meaning of Christian perfection in this kind of Church, and in this kind of society?

In one way or another, this was the core of the issues at stake in most of the controversies in which Jerome found himself involved during his long life (he died at the age of nearly 90 in 419 or 420). Could classical culture be reconciled with a Christian's biblical faith? Could the married life provide a framework for the life of prayer? Was any authentic Christianity conceivable without asceticism? Was Christian perfection available to men through the exercise of their will? Such were the questions which arose between Jerome and his many adversaries; and it was on questions of this kind that the great rifts of the period opened in the Church. Only one major field of Jerome's interest falls outside the circle of problems concerned with Christian perfection, and it is a thread which runs through the greater part of Jerome's literary career: his almost fanatical concern for the text and the meaning of the scriptures, pursued through the long series of translations and commentaries on which he was at work for most of his active life.

Dr Kelly has mapped the course of Jerome's life and his scholarly work, so intertwined with, as well as often interrupted by, his controversies. He has followed Jerome through each of his, usually acrimonious, debates with discriminating perception and a fine balance in which there is no lack of sympathetic understanding of his subject on the one hand, and no trace of hagiographical indulgence on the other. Jerome's dishonesty, spite, pettymindedness, his conceit and vanity and his personal animosities are gently shown up, without the slightest hint of deliberate denigration. At the same time the remarkable qualities of Jerome's scholarship ("genuine and wide-ranging" ... "but defective in both originality and self-criticism, and all too often marred by partiality, carelessness, unwillingness to take trouble . . ."), his dedication to his work especially on the text of the scriptures, and the warmth of his love for a few friends and followers are again and again evoked.

The book opens upon perspectives which need further exploration, which could scarcely, however, be expected to be explored within the limits of a biography. Jerome's controversies all take us into an intricate web of personal and social relationships, and it is often these, even more than the theological issues at stake, that determine their course. The patrons and supporters of Jerome, Rufinus, Jovinian and Pelagius, form a part of that complicated pattern of cliques so characteristic of aristocratic Christianity in the west, which makes the theological conflicts an important chapter of the social history of the Christianised Roman Empire. Peter Brown has written part of that chapter (on Pelagius). Kelly's *Jerome* points to the need for more

Bernard Capp

Mendicant and preacher

The Coming of the Friars
by Rosalind Brooke
Allen & Unwin, £5.75
ISBN 0 04 942045 3

The friars were the last major religious orders of the Middle Ages. For most of the thirteenth century the Dominicans and Franciscans, in particular, largely dominated its spiritual and intellectual life. They brought a new concept of evangelization through mendicancy and preaching which at once challenged the ordinary clergy and departed from the monastic orders. Like the latter in their time, they revivified the church only in due course to become absorbed by their own achievement. As their impetus waned by the later thirteenth century they were not replaced by any comparable new orders; instead, mainly through the inflexibility of the church, the search for new forms of religious life became increasingly unofficial, unorthodox and personal, and the demand for reform increasingly directed against the church itself. The contrast is the measure of the friars' importance; for a time they canalized the religious fervour of an epoch; with their decline it no longer had recognized alternative outlets, beyond those of the existing religious and monastic orders, which could not meet it.

Rosalind Brooke's book, the latest in Professor Elton's series, Historical Problems, has the great merit of treating the emergence of the friars within the wider context of religious reform. She has skilfully arranged her studies and documents to illustrate the circumstances in which the two main orders of friars, the Dominicans and Franciscans, arose. Beginning with St Francis as the epitome of what was distinctive in the new orders, she then turns to their antecedents during the twelfth century. By examining successively the rise of the Cistercians, Savigny, the Premonstratensians and other centres of monastic reform, the main twelfth-century heretics (Peter of Bruys, Henry of Lausanne, Arnold of Brescia, and Peter Valdes) and the development of papal policy both of reform and the repression of heresy, she is able to identify the religious elements that went into the making of the friars. She ends with an account of the origins and development of the Dominicans.

Dr Brooke does not say how she envisages the relation between the friars and their predecessors; but she is too scrupulous an historian to treat it as a quick facile equation and

effect where the circumstances produced the individuals and their works. On the contrary what her study shows clearly is the diversity of response to the common impulse which moved all these individuals and groups, that of seeking to come closer to God. That impulse could take the monastic form associated above all with Citeaux and the other new monastic orders, of emphasizing the element of austerity and renunciation in the Benedictine rule, in withdrawal from the world and a life of austerity given up to work and prayer. Or it could lead, as it did heretics like Valdes, to efforts to emulate Christ's own apostolic life of mendicant poverty and preaching the gospel; or to the attempt by Arnold of Brescia to impose that life upon the church, bringing a return to Christ's life and teaching. At the same time there were individuals, like Vitalis of Savigny, Bernard of Tiron and Norbert of Xanten, each the founder of a new monastic order, who sought the life of hermits and preachers before finally being prevailed upon to join a monastery. In their case, far from the institution respoiding to the individual and his circumstances, it was the very absence of alternative institutions to the monasteries that led to their becoming absorbed into them.

There is the further paradoxical element, that the new impetus to preaching, which was to be one of the hallmarks of the friars, came from the supreme monastic presence of the first part of the twelfth century, St Bernard, abbot of the Cistercian abbey of Clairvaux. These all testify to a new religious spirit. Even so, it is doubtful whether it alone could have produced new forms of religious orders had not the very need to combat the heresies of the Cathars and of unofficial apostolic groups led Pope Innocent III to authorize bands like those of St. Dominic to preach against them. It was through their recognition first by Innocent III and then Honorius III that the Dominicans and Franciscans came into being; the popes gave the imprimatur to the friars which an earlier pope, Alexander III in 1176, had refused to Peter Valdes. The Dominicans and Franciscans became the great new religious orders of the thirteenth century; the Waldensians another, and the most agreegious, body of heretics.

It is this convergence between piety, heresy, monasticism and reform which constitutes the setting to the friars, and to which Dr Brooke's book makes an admirable introduction.

Gordon Leff

Spirit level

The Levellers in the English Revolution
edited by G. E. Aylmer
Thames & Hudson, £4.50 and £1.95
ISBN 0 500 75005 X and 76005 5

Professor Aylmer, best known for his work on central administration in the seventeenth century, has brought the same lucidity and meticulous care to a new and valuable collection of Leveller writings. He shows a still rarer quality in the ability to write with sympathy both on bureaucracy and on radicals to whom bureaucracy was an anathema.

The Levellers in the English Revolution is clearly designed for the university market, and in particular for the needs of special subjects, and has to be judged in the context of its competitors in this field. The massive collections of Haller and Davies, and Wolfe, belong to a different category, and the only real rivals are Shaw's *The Levellers and Woodhouse's older Puritanism and Liberty* (reissued earlier this year by Dent, in paperback). Though Shaw's book is useful, Aylmer's work is altogether more substantial. Indeed, his introduction is easily the best short history of the movement, well-written, clear, sympathetic but not indulgent, taking note of recent developments, and alerting the reader to current areas of debate. (Woodhouse's introduction, by contrast, is a far more general essay on the theme which gives his book its title.)

Professor Aylmer emphasizes the history more than the ideology of the movements; the latter, after all, should emerge from the documents. On the controversial Macpherson thesis he preserves a judicious editorial neutrality. Elsewhere his views are more evident, and he expresses disagreement with Christopher Hill's analysis of the Levellers in terms of a moderate and radical wing. Other writers, equally important (he argues) produce different alignments: the secular tone of the radical Overton and moderate Wildman contrast with the more religious flavour of writings by the moderate Lilburne and radical Walwyn. One of the most interesting documents is an excerpt from Lilburne's *Londons Liberty*, spelling out his political credo, and leading through a plague of biblical citations to a surprisingly radical avowal of the rights "of all the Sons of Adam, as man" (though within a few lines Lilburne reverted to his traditional and very different theme of maintaining the "liberties established in a Land, by Law, against the incroaching usurpations" of the mighty). The heterogeneity of the movement is certainly proved. But if a neat distinction between moderates and radicals is too simple, some formula will be needed to describe a broad spectrum of views (outside the party caucus) extending some distance towards the position of the "True Levellers".

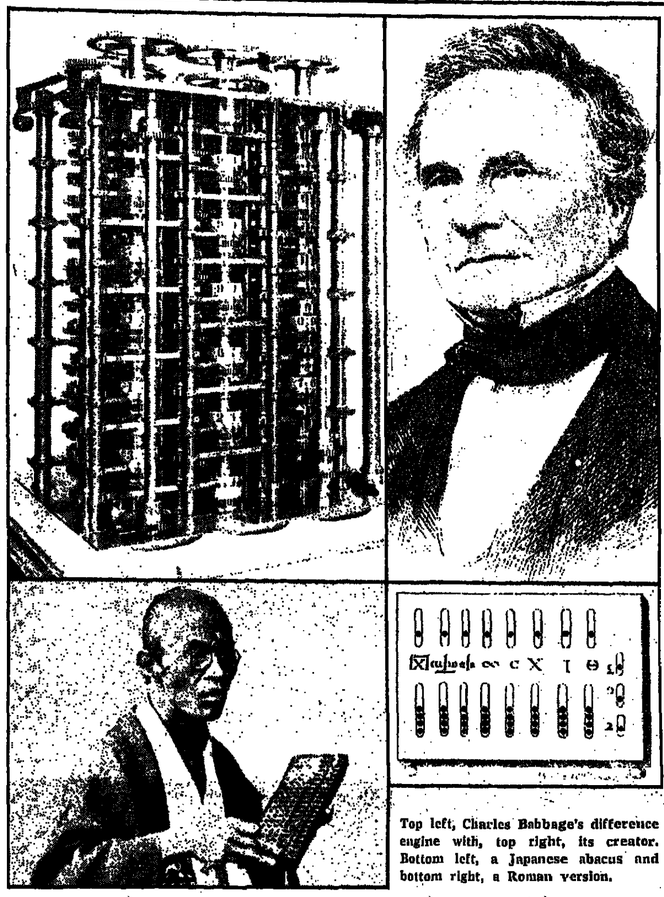
To a considerable extent, Leveller documents select themselves. We are given, inevitably, the *First Agreement*, the petitions of March, 1647, and September, 1648, and a large extract from the Putney Debates (the proceedings on the second day, containing the key discussions on the franchise: given here in the original text, without the editorial modifications introduced by Firth and Woodhouse). The omission of the first and third day's debates, though a pity, is understandable: students make heavy weather of the arguments over earlier engagements. Among other items, there is some overlap with Woodhouse, but on the whole the choice is complementary.

Aylmer offers far more on 1648-49, notably *England's New Chains* and *A Manifestation*. Overton's *An Arrow Against All Tyrants* (1646), an important piece of evidence for Macpherson's thesis on self-propriety, is a welcome addition. The *Articles* from Overton's *Appeallle*, however, tell us less about the spirit of the Levellers than does the magnificent repudiation of the traditional appeal to the past in the opening passage, which is printed by Woodhouse: "Reason hath no precedent; for reason is the fountain of all just precedents".

Aylmer's book contains a good critical bibliography (though if there is room for Gooch and Bernstein, why not for Robertson's *The Religious Foundations of Leveller Democracy*?). The illustrations are less successful. Portraits of prominent leaders are of some value, but what do we learn from the pleasant view of Sanford church, or the full-page illustration of harvesters at work, with a caption telling us that the Levellers showed little interest in the rural masses?

It remains to be seen whether *The Levellers* will supplant Woodhouse's collection. Many teachers will want to keep the full text of Putney; not all students will appreciate the harsher reality of the basic text. But this is a valuable book which deserves and will gain a very wide readership.

R. Malcolm



Engines that make it all add up

John Dubbey

The unsuitability of early numeral systems for purposes of calculation coupled with the relatively late development of adequate writing materials ensured that the need for calculating aids became obvious from a very early age.

There is worldwide evidence that primitive devices to assist calculation existed in ancient times, and it could be argued that their presence helped to clarify basic numerical ideas such as the concept of the radix and suggested the way ahead for the evolution of more rationally designed number systems. Devices such as knotted strings, tally sticks and complex finger reckoning were used but the first major aid to calculation was undoubtedly the abacus.

Most early civilizations were familiar with some type of abacus and it would appear that three basic types emerged: the least sophisticated, usually referred to as the dust abacus and known to be used by the Hindus, Greeks and Romans, consisted simply of a table covered with sand on which marks were made with a stylus and erased when necessary.

A more advanced type was the counter abacus in which stones or counters to indicate numbers were moved in straight lines on the table, a device used in Europe until the seventeenth century. Herodotus refers to the use of counter abaci by both Egyptians and Greeks, and other references can be found in the writings of Horace, Juvenal, Cicero and Lucilius. The counters are called "calculi" (pebbles) from which the verb calculare is derived.

The third type consists of a frame with balls or discs moving on parallel rods or grooves and this has been used extensively up to present times. The most notable examples are the Chinese *suan-pan* used from the twelfth century, and the Japanese *soroban* from the seventeenth.

Both of these divide the frame by a bar. The *suan-pan* has five beads per rod below the bar each worth a unit, ten, hundred, etc, and two above the bar both with a value of five. The *soroban* reduces to four below and one above. Both types can be used with a speed and efficiency which challenges modern mechanical and even electronic devices.

Further aids to calculation came in the seventeenth century, one of the most fruitful periods of machine-aided development. John Napier constructed his rods or bones described in his *Rabdologiae* (1617) and essentially a device for storing multiplication tables; of even more significance was his invention of logarithms in 1614 which led to the development of the slide rule.

E. Gunter in 1620 was the first to construct a device using this discovery in his "line of numbers" with distances proportional to logarithms.

Compasses were used to add or subtract lengths, effecting multiplication or division. This idea was improved by W. Oughtred in 1622 who had two "circular scales" sliding along one another. A circular form of this device was constructed by R. Delamain in 1630 and R. Bissaker presented the idea of a slide moving between two scales in 1654.

The invention of the calculating machine is normally attributed to Blaise Pascal but it is now evident that he was anticipated by Wilhelm Schickard, and in one sense by Hero of Alexandria in the second century BC. Hero's odometer, a device to measure the distance moved by a wagon wheel made use of a train of gear wheels linked so that each time a wheel completed a revolution, the next one turned a place to record a "carry".

As F. Hammer discovered in 1957, Schickard of Tübingen wrote letters to Kepler describing a machine he had built in 1623 capable of performing arithmetical operations. This consisted of a train of gear wheels used as an accumulator with a separate set of interconnected wheels in which the results were manually recorded, together with a set of six cylinders on which were engraved the multiplication tables after the style of Napier's rods. Schickard's last letter reports the destruction of the machine in a fire and nothing was heard of his invention.

Pascal made several attempts to build a calculating machine intended to help his father with book-keeping calculations before producing one between 1642-1644. This was capable of performing addition or subtraction by a counting process in which the results were registered on dials. Several copies of this machine were made but their performances were generally unreliable.

Leibniz heard of Pascal's machine and determined to build a superior device capable of multiplication and division more directly. He designed such a machine in 1671 and constructed it in 1694. Multiplication was achieved by continual addition using a handle and shifting the position of the digits.

It had a mechanical device known as the "Leibniz Wheel" or "stepped reckoner mechanism" consisting of a set of 10 fixed coaxial gear wheels each with a different number of teeth representing the digits from 0 to 9. This device was used in the improved machines of Hahn Bidle Staehope (1770), Staehope (1775), Müller (1783) and Thomas (1820).

Probably the greatest of all innovators in the field of calculating machinery was the English mathematician Charles Babbage (1791-1871). His major work the analytical engine, commenced in about 1834, anticipated much of the logical design of a modern digital computer, but the development of his other machine, the difference engine, is of more interest here.

Babbage claimed that he first thought of such an engine in 1821 when given the news that an ambitious attempt was being made in France to improve mathematical tables with logarithmic and trigonometric functions calculated to 20 significant figures. The task was to be performed by three sections of calculators.

The first section, consisting of half a dozen mathematicians, including Legendre, had the task of devising suitable interpolation formulae which would be passed to the second section whose job was to break down these formulae into simple arithmetical operations capable of accurate execution by the largest section of about 90 mathematical artisans.

Babbage leapt to the conclusion that such arithmetical drudgery could be performed more accurately, economically and quickly by a machine, which he set out to build. In 1823 he had completed a model of his difference engine which he exhibited to the Astronomical Society and received a gold medal for his labours. This was, unfortunately, the only reward Babbage ever received for his work on the engines over the next 50 years.

The mathematical principle was very easy—simply as Babbage asserted, the difference equation $\Delta^n u(n) = C$. To construct a quadratic function like, for example, n^2+n+41, whose fascination lay in its apparent ability to produce a string of prime numbers, one set $\Delta^2 u(n) = 2$ and proceeded:

u(n)	Δu(n)	Δ²u(n)
41	0	2
43	2	2
47	4	2
53	6	2
61	8	2
71	10	2

This process could be simulated by an engine consisting of three parallel columns, each column containing three parallel wheels with 10 teeth graduated from 0 to 9 representing units, tens and hundreds. Initially the three columns would be set at 41, 0, 2, respectively, the third being fixed at 2. Sequences had to be mechanical so that the third column added its contents to the second, the second to the first and then for the process to be repeated as many times as desired. Babbage's model did work, and he found that the first 30 values of n^2+n+41 could be computed in this way in 2 minutes and 30 seconds.

Babbage now made the reluctant

Top left, Charles Babbage's difference engine with, top right, its creator. Bottom left, a Japanese abacus and bottom right, a Roman version.

The author is the head of the mathematics department of the South Bank Polytechnic and honorary secretary of the British Society for the History of Mathematics.

CALCULATORS

Power in your pocket

Alan Cane

I was born on a Saturday, which should give nobody pause (except my parents) were it not that I was given this fact by a pocket calculator. The machine in question was the HP65, top of the Hewlett-Packard pocket range and an impressive example of what modern miniature calculators can do.

The HP65 is, according to Peter New, sales manager of Taylor-Wilson Systems Ltd "the one calculator which can never be allowed in examinations". With the capacity to execute programs up to 100 steps in length it becomes (in the words of the advertising blurb) "your own highly specialized 'answer machine'".

The boom in the pocket calculator business is unprecedented. The first machine small enough to be stowed in a pocket was developed (by Bowmar) in 1971 yet, this year the market world wide is valued at £1,250 million, representing some 50 million individual calculators sold.

The range and variety is bewildering to the layman. To guide me through the maze of available machines I visited Taylor-Wilson Systems Ltd; the firm describes itself as a specialist supplier of calculators and its chief speciality is expert advice. It will assess your problems, tell you what machine will suit your needs and sell it to you.

Peter New (who has written one of the articles in this feature) travels incessantly from one educational institution to another with a holdall containing £2,000-worth of calculators.

Specialists like Taylor-Wilson divide the market into two categories: machines costing under £12 and designed for mass sales (the experts describe them, not unkindly, as "toys") and sophisticated machines for professional use costing from £12 upwards. The price of a calculator is an uncertain guide to quality as costs have plummeted over the past four years.

The first pocket calculator was sold in November, 1971, at £70. In spite of inflation and devaluation, one can walk into Dixons (which sells more calculators to the mass market than anyone else in Britain) and buy a machine for under £10 which will do all the 1971 machine could do and more. A 100 step programmable pocket calculator will shortly be on the market for under £50, and a perfectly acceptable scientific machine will soon be available for about £15.

Prices have probably "bottomed-out" now, and are unlikely to fall further, but advances in calculator technology mean that users will get more calculating power for their money in future. For example, it costs virtually the same to produce a simple four-function (addition, subtraction, multiplication, division) machine than it does to produce a five function machine (with a percentage key) with memory.

Many manufacturers are producing calculators at a loss and some are in deep financial trouble—in fact it seems likely that only a few will survive to take advantage of a replacement market which probably runs at about 10,000 units a month for popular models.

Even at the lower end of the market, few calculators are really bad. Taylor-Wilson refuse to handle only a few machines, and these are chiefly calculators assembled for the mass market. On the other hand, Peter New describes machines such as the CBM 776MD selling at £7.99 or the Rockwell 8R selling at £9.95 as "great little calculators".

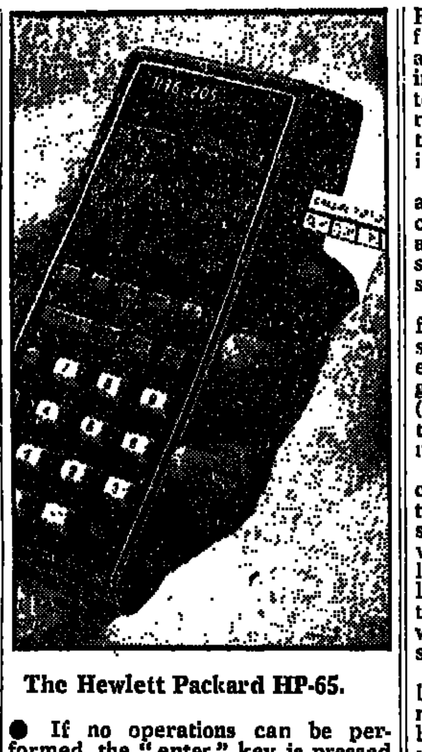
These are five function, battery operated machines. The CBM display seven digits, the Rockwell eight, and they both use algebraic logic to do any particular calculation; here the numbers and functions are entered on the calculator in the conventional mathematical order, for example, 3×4=12 involves entering 3 pressing the multiply key, entering 4 and reading the answer after pressing the equals key.

Another form of calculator and computer logic called Reverse Polish Notation is used on many calculators, particularly those intended for scientific or technical purposes. All Hewlett-Packard pocket calculators use this notation, so-called because it was developed by the Polish mathematician Jan Lukasiewicz.

Using RPN for the preceding calculation, one keys in 3, then presses a key marked "enter" which enters the number. The next number, 4, is then keyed in and the answer is given by pressing the multiplication key. There is no "equals" key on a RPN machine.

The RPN method consists, in short, of four steps.

- Starting at the left side of the problem, key in the first number.
- All possible mathematical operations are performed on the number.



The Hewlett Packard HP-65.

- If no operations can be performed, the "enter" key is pressed to store the number for later use.
- These three steps are repeated until the calculation is complete.

Manufacturers who use RPN on their machines argue that the system gives powerful advantages over algebraic systems, and indeed, complex problems involving many subcalculations in parentheses can be solved using RPN with fewer keystrokes and without the need to think the problem through first and reconstruct it in a form suitable for calculation in algebraic logic.

After the simple calculators come the five-function machines with rechargeable batteries, an important addition where a calculator is used frequently and where the cost of replacing batteries may mount rapidly. Examples are the Datamath II, the CBM GL996R and the Texas Instruments 1500. All cost in the region of £12-£15.

From the user's point of view, most cheap calculators and a few of the expensive ones are a little uncomfortable to read because the read-out display glows red—in fact it costs about £3 more to produce a green read-out but these are brighter and much less tiring to use over a long period.

Green and red displays are usually built up of light emitting diodes (LEDs). Displays based on liquid crystals have been used—the numbers have a strange flat silvery look—but these are visually less efficient in dull light and, oddly, cannot be used at all in the dark.

In the range from £14-£25 come the rechargeable calculators with built-in memory including the Rockwell 21R, the CBM GL997R and the Texas Instruments 2500. These are much bulkier machines and are better described as portable calculators rather than pocket machines.

There are three types of memory in common use on calculators—the single number stack, fully addressable memory and full register arithmetic memory. Single number stacks will store a single number for future reference. Fully addressable memories enable one to add or subtract from the memory, recall the answer and clear the memory. Full register arithmetic memories further enable the user to multiply and divide whatever figure is held in the memories. Powerful calculators such as the HP-65 have a four-register memory stack essential to the use of Reverse Polish Notation in these machines.

Scientific calculators start at about £15—the Sinclair Scientific can be bought for as little as £12, although it is a little limited and some would not classify it as a true scientific calculator.

These are probably the most useful machines for the working scientist and should have at least an eight digit display (or mantissa) together with a two digit exponential (an extra display at one side essential for working with powers of numbers).

It should also have five functions, constant, at least one memory and the ability to perform a number of scientific functions including conversion of numbers to the logarithms to base 10, natural logarithms, $1/x$, e^x, sines, cosines, tangents and square roots, together with polar-rectangular exponent shifts, and the very important y^x.

This would result in a huge number of keys and a very unwieldy machine, so most manufacturers have adopted the device of keys which will serve more than one function.

After the scientifics—and there are many of them including the CBM 9120D and the HP-21—come the special machines built, for example, to do metric conversions, or business machines which will calculate interest and other things of importance in the City. These often use one of two special calculator logic systems, business logic and addmode. This last system is particularly important for printing calculators where it saves time and energy—one does not continually have to add the decimal point.

Programmable calculators are the top end of the market and are virtually portable computers. There are two principal kinds, those which are programmed through the keyboard and those which use programs pre-written on magnetic cards or tape.

Interest in programmable calculators has been vastly stimulated by the massive advertising campaign mounted by Sinclair Radionics for their Sinclair Scientific Programmable. For a shade under £30, Sinclair offers a machine which will do calculations of up to 24 program steps (a program is a series of instructions to the calculator telling it what to do) programmed through the key board.

The Novus Mathematician at about £58 is the cheapest 100 step programmable calculator available and the Novus Scientist which will be available shortly in this country will for about £65 give the user much more calculating power.

From these machines upwards, you get very much what you pay for, with the HP-65 with its pre-written program on magnetic cards the most expensive "pocketable" pocket calculator at £474.

Pocket calculators are clearly here to stay and certain to become more sophisticated—pocket machines are already built with print-out devices and electronic timers and from the users point of view there seems only one significant disadvantage—one totally loses the facility to perform mental arithmetic.

The author is deputy editor, The THES.

CALCULATORS

The Oxford way with managers

David Lethbridge

Apart from postgraduates pursuing higher university degrees, the Oxford Centre for Management Studies attracts a constant stream of residential post-experience students who are, in the main, managers on short-term secondment from public and private organisations. The centre attempts to create a learning climate which will in the future enable managers to use more effectively the scarce resources under their control. Course objectives include raising the general level of numeracy and developing some understanding of the available quantitative techniques.

The typical post-experience student will have management experience largely based on one function (perhaps marketing, finance, personnel or production, etc), he will be aged between 30 and 50, is unlikely to be a science graduate, and may well have received no more than a secondary school education. He will probably, in his youth, have studied arithmetic, trigonometry and geometry but he is likely to lack any formal knowledge of elementary statistics, and is somewhat fearful of his ability to master new quantitative concepts.

This large diversity—of educational background, age, learning ability, and job-experience—makes it extremely difficult to identify a common-starting point from which to teach successfully the quantitative management sciences. Although these mature students are normally well motivated and full of goodwill it is far too easy to pitch the comprehension level of a lecture above that of the less numerate section of the class, who will then become worried and so learn little; conversely, if one spends time on remedial arithmetic then the production managers and engineers will quickly become bored.

The Oxford centre has had 10 years experience with post-experience students, and the teaching approach has changed considerably during that period. The main conclusions which have emerged are:

- Do not teach numeracy as an abstract subject but relate it to the prime skills which all managers must possess. Managers are essentially decision-makers, and to make effective decisions they must be able to analyse and interpret numerical data, and be able to make forecasts against an uncertain future. The real skill of the manager is to make sound decisions based on imperfect information, and to that end concepts of probability and expectancy, averaging and sampling, are all important tools which he must master.
- Encourage students to self-schedule their own learning activities. The focus must swing away from the teacher and the act of teaching, concentrating instead on the pupil and the act of learning. The centre, together with other co-operating institutions, is developing a system (self-scheduled manager development) whereby each student would select his own educational objectives and required level of achievement; he would also select his own learning media and pace of education and he would be provided with individual feedback on his rate of progress. Although the emphasis is on scheduling as an individual planning tool, evidence suggests that classroom-based group learning activities are likely to continue as one of the most-preferred learning alternatives.
- Avoid being hooked on the detail of remedial arithmetic—and this is where pocket calculators really make their mark.

The management science teaching syllabus at Oxford originally contained several basic arithmetic classes—in which such items as the use of log tables and the hand calculation of square roots was covered. In the late 1960s we tried using electrical calculators in the classroom, but their logic defeated the managers. To teach them how to divide using our particular machines took almost one session, with no guarantee that the method would be recalled later. Therefore we have tended to construct fictitious and easily worked examples to be computed by hand. Standard deviations were always whole numbers and expected monetary values were made artificially simple to calculate.

More complicated cases (such as trend projections) were demonstrated by using a computer terminal, which posed several problems, including occasional difficulty in getting on-line facilities when the class was scheduled, too much noise in the classroom from the terminal itself, and the inability of the majority of the class to participate in, or even see, what was going on.

However, we will continue to require the classroom computer terminal for demonstrations and student use when dealing with more complicated techniques which contain a considerable amount of calculation.

The advent of hand-held calculators in late 1971 did not immediately replace the terminal because calculators were initially too expensive to issue on the basis of one per student (especially as the administration expected that pocketability would result in portability off the premises!). By 1974 the price was such that calculators could be generally used, and as a result there is now far less emphasis on basic arithmetic and number manipulation in the classroom, so that a fuller discussion of the concepts themselves is now possible.

The following features are relevant to the choice of a suitable calculator for classroom use with post-experience management students:—

Algebraic Logic (sometimes known as full-flow logic). This type of logic allows managers to key-in whilst following the same sequence they would use when solving equations on paper, thus making it unnecessary to give classroom instruction on the correct keyboard sequences to be used. Other types of logic exist (such as reverse Polish) and may require one hour or so of homework before the machine can be fully utilized.

Floating decimal point. This feature automatically puts the decimal point where it is required. The alternative, the fixed decimal point operation, always provides a fixed (preset) number of digits after the point, and is less versatile than the floating point although extremely useful for repeat additions of financial figures, since the £s and pence are automatically separated.

Basic Functions. The more functions the calculator contains the greater the possibility of confusion; and doubling or trebling the options for each key does not always lead to the expected benefits.

For teaching managers a two-stage approach appears to be most successful. Start with a modest calculator (issued to *each* member of the class) containing the four basic functions (+, −, ×, ÷) together with a square-root key. It is also useful to have a single memory—but in this case provide a half-page *simple* guide to the various keys (for example, RM, CM, X-M) which cause confusion and lead to wasted time, and also explain what a memory is.

This simple stage one calculator is used for the first two or three weeks of the course, until such concepts as the average, index numbers and measures of dispersion, have been covered. In stage two a more advanced calculator can be issued on the basis of one per syndicate group.

Special Functions—Ideally, the student of general management (as against one of the more specialized areas of management) requires a calculator which can rapidly perform two types of data manipulation:—

(a) Statistical—including calculation of the mean, standard deviation, and regressions.

(b) Financial—including the present value of future cash flows, and (but not yet available) internal rates of return.

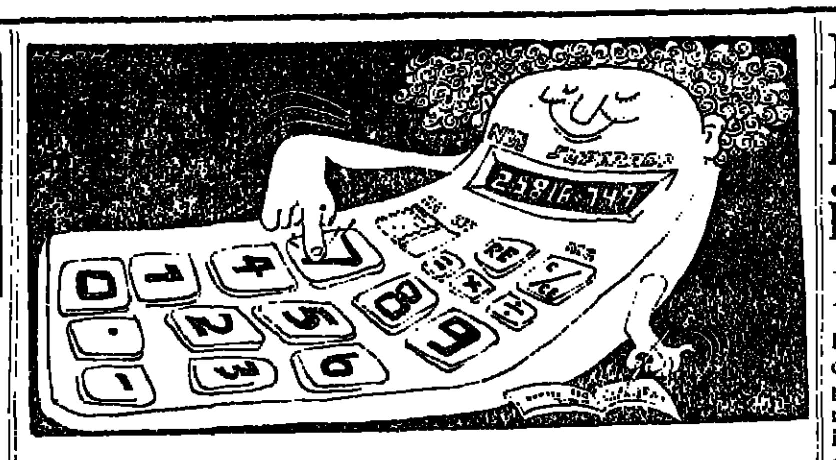
Although one recent introduction, the Hewlett Packard 22, does attempt to cover both areas (and is advertised as a sophisticated general purpose calculator for managers) most of the currently available calculators are "dedicated" to either statistical or financial use; they are not designed to cater for both requirements simultaneously.

We currently use the Prinztronic "Financial", which is available from Dixons. It is relatively cheap, but does not fully cover all the necessary statistical functions. For instance, calculation of the mean can be effected by a function key, but there is no standard deviation button, and the "trend" key requires regularly-spaced readings on one of the co-ordinates (OK if the data was collected on a regular time basis—but not useful for other correlations).

There is, as yet, no cheap general-management calculator on the market which can also offer an internal rate of return capability. The centre has recently surveyed over 50 different calculators and for readers with a special interest in this area the full report will be available in the Journal of the Association of Teachers of Management.

The author is a fellow of the Oxford Centre for Management Studies, Oxford University.

CALCULATORS



Slide rules no longer —OK?

Henry Sawistowski

The use of electronic calculators in engineering examinations has been discussed over the past few years with increasing frequency. The case against them was initially very strong and rested on the justifiable proposition that every candidate at an examination must be treated equally. It was argued that permission to use electronic calculators would lead to differentiation between students on financial grounds—a situation which was totally unacceptable. Their use, it was said, could only be allowed if they were to be supplied by the university in the same way as logarithmic and other tables. Obviously, the cost involved made such an operation prohibitive.

There was, nevertheless, a strong undercurrent of opinion that calculators posed no new problems, and that the same arguments must have been advanced previously against the use of slide rules in examinations. In time, however, slide rules owned by students became accepted examination instruments with no reference to their make. In the view of engineering teachers, in particular, there was a close analogy between the use of pocket electronic calculators and slide rules. They felt that the problem should be stated differently: the question is not *if* electronic calculators are to be allowed, but *when*.

In the University of London, the Academic Council decided in 1973 against the use of student-owned electronic calculators. However it re-opened the issue in 1974 and asked the relevant Academic Advisory Boards for its re-consideration. This change in attitude followed the sudden and significant fall in the cost of these machines. The cheapest models became competitive in price with slide rules and their use became quite common among engineering students.

For instance, a spot check conducted in January 1975 among first-year chemical engineering students at Imperial College has shown that 60 out of 65 students possessed electronic calculators. These students would have been at a severe disadvantage if they had not been allowed to use their machines at an examination.

The basic proposition that all candidates at an examination must be treated equally could therefore no longer be applied against the use of calculators. Arguments of this kind persuaded the Academic Advisory Board in Engineering, after consulting the appropriate Boards of Studies, to advise the council in favour of calculators. In March 1975 the Academic Council empowered the Boards and Committees of Examiners to permit the use of such machines in *engineering* examinations for internal students from 1975 and thereafter. Following swift action by the schools of the university, electronic calculators were used in these examinations in June of this year.

The permission was subject to certain general provisos concerning the nature of the examination and the type of calculators. Obviously, the calculators have to be silent, compact and battery-operated and must also be non-programmable. Consequently some kind of monitoring service had to be devised which means that students are asked in advance to register the type of calculator they intend to use in the examination. Calculators which do not satisfy the required criteria are refused registration; subsequently, at the examination, the calculators are checked against the register.

There is also a general requirement that examinations in which calculators are permitted must be set so as not to give candidates with calculators any advantage over candidates with slide rules. Should this be impossible, adequate notice must be given to candidates that calculators will not be permitted for specific papers. These requirements are obviously transitional in nature.

In the past there were always a few students without slide rules, but there was no requirement for setting papers in a way which would give possesors of slide rules no advantage over students relying on logarithmic tables. It was considered, and rightly so, that possession of a slide rule was a must for an engineering student. In a couple of years this will equally apply to electronic calculators.

The decision in favour of electronic calculators has been almost unanimous among engineering teachers. But this has not been the case, at least initially, in other subjects. The explanation lies probably in the smaller amount of everyday computational work performed by non-engineering in comparison with engineering students. This, in turn, reduced the need for possession of electronic calculators and thus makes a change in examination rules less imperative. However, in the University of London a decision was recently taken which allows Boards and Committees of Examiners to extend the use of calculators to examinations in all faculties except medicine.

Are there any lessons to be drawn from the use of calculators in examination? Strictly speaking, apart from sighs of relief from students after the change of rules was announced, there is little to report following a single experience. Perhaps there was a marginal increase in silly calculational errors. Students seem to put more faith in button pressing than in pushing the slide rule.

In addition, the exercise of placing the decimal point in slide-rule operation gave them an additional check on the quality of the result which has now disappeared. However, this is an impression rather than a definite conclusion.

● On November 10 the Academic Council of the University of London informed the schools of the university that the restrictions on the use of programmable type of calculators was impractical because of the difficulties in monitoring. Instead the council requires the examinee to state on his script the name and type of calculator.

The author is reader in chemical engineering and senior tutor in the department of chemical engineering, Imperial College.

More for less in future

Peter J. New

It would take a very well polished crystal ball and access to the competitive secrets of the leading manufacturers to acquire detailed information on the new models of electronic calculators to be produced over the next few years. However, certain trends are now emerging which coupled with a look at the latest products from the major innovators, give some indication of probable developments.

At the cheap, mass-consumer end of the market much lower prices only look possible by dumping discontinued lines. Prices of new models should stabilize somewhere near the present discounted price levels but changes at this end of the market are likely to be more cosmetic than innovative with manufacturers seeking to produce profitable models.

The present price compression of simple scientific types with memory, square root models in the £15 to £30 bracket leaves little room for further reductions. Present models are likely to be superseded by new ones with two or more memories, polar/rectangular coordinate conversion and simple statistic functions such as mean and standard deviation. Probably the next generation machines will work to higher accuracy levels than earlier models.

The range possible by perming battery/rechargeable/mains operated calculators with either single or multi-function keyboards, all based on the same large scale integrated circuit, to produce a family of calculators in the £25 to £50 price bracket is demonstrated by the new scientific calculators being progressively introduced by CBM. This variation on a basic theme already widely used in the motor industry, could well become commonplace amongst calculator manufacturers in the near future.

Product improvements not affecting the capability of the calculators that we could see over the next couple of years are in the areas of displays and printing facilities. The light emitting diode (LED) displays, are currently the most common type found on pocket calculators. They are preferred by manufacturers for their cheapness, reliability and low power consumption. We will continue to see better LEDs appearing, brighter and with better formed characters. The larger green fluorescent (digitron) displays are more legible but less favoured, as they operate at much higher voltages, imposing more demands on the circuitry and are therefore more expensive than LED display machines to manufacture.

Both types are likely to be seriously challenged in the next year or so by electrochromic displays giving white on black which appear to be a better possibility than liquid crystal displays.

A great deal of development work is taking place in both the United States and Japan, to provide cheap, reliable print-heads small enough for portable calculators. A Swedish company has already produced a solid-state hybrid chip, which provides a thermal print-out under logic control without any moving parts. Two portable rechargeable printing calculators are already on the market, these are basic five function machines. It will only be a question of time before these are applied to scientific calculators.

Moving into the area of higher quality calculators, we see that new ranges of multi-function calculators are becoming increasingly evident. A highly competitive situation exists in this area with laurels being hotly contested by Hewlett Packard and Texas Instruments. The sort of innovations that can be expected in this area are:—more memories and functions; expandable calculators, to be used with cradles to provide mains operation; larger displays and printout facilities on site but removable for use as portable units for field work; improved programming capabilities.

In the £55 to £90 range a number of new desk top mains versions of existing portables will be introduced in the next few months. Rockwell's new model 350, a desk version of the 63R, was shown at the Business Efficiency Exhibition, and will be generally available shortly. CBM are introducing a desk version in the scientific family and Sharps PC1001 has been reduced to under £90.

It is in programmable calculators that the most interesting developments are probable both in the areas of key-stroke programmables that lose their programmes once they are switched off, and those that retain them.

It is now possible to buy a 100 step programmable calculator for under £50—the Novus Mathematician. For anyone needing to evaluate repetitive problems, applying different data to the same formula, the advantages of these machines are obvious. Probable developments in this category are further price reductions and new models with improved programming capability.

The current simple programme writing facility on the cheapest machines consists of "stop", "start", "delete" and "skip" keys. The new models can be excepted to have "go to" instructions, merged key codes, (where "function shift" and the function itself will only take one programme step). This will effectively increase the number of programme steps. We can also expect step keys for editing and checking and better presentation of the programme information on the display; additional branching facilities and conditional jump tests can also be expected to become the norm. The new Hewlett Packard HP-25 compared to the HP-55 points the way and others will probably follow.

Memories will improve, not only in the number available, but in their capability. Full register arithmetic (multiplying, dividing, adding or subtracting the number on display into the memory) will become common place.

The imminent introduction into this country of the Texas SR52 magnetic card programmable calculator which will have 224 programme steps, 20 memories, brackets nesting to 10 levels, conditions jumps and an optional cradle with thermal printout, all for under £500, will undoubtedly stimulate demand for this type of machine. When considered as an alternative to computer terminals for short programme work, or as a method of introducing programming aspects of computer studies at secondary school level, this range is worth close study especially in times of financial stringency.

Two alternative methods of retaining programmes within pocket calculators after they have been switched off, are also being developed. One method is to leave the programme memory circuits energized after the calculators have been switched off. This is possible because the consumption of the memories is measured in Nano-amps. The second possible method of achieving programme retention is by constructing memory circuits of materials with a long decay time so that they will not lose their programmes until some time after the calculator has been switched off.

The future can there-fore be summarized as a continuing highly competitive situation which will lead to the introduction of improved quality calculators with more functions and memories but at present price levels. This is one commercial war in which the buyers are coming out the winners.

The author is sales director of Taylor-Wilson Systems Ltd.

CALCULATORS

Possibilities in the polytechnic

R. C. Wishart

In a recent advertisement, a leading computer manufacturer pointed out that the cost per operation is now less than 1 per cent of the cost just over 20 years ago.

For those who have to rely on desk-top calculators, it is unlikely that we have costed each operation in a similar manner. But in the lifetime of the electronic calculator, barely 10 years, the price of a four-function, square-root memory calculator has fallen to less than half a per cent of its original cost, not to mention the improvements in speed, accuracy and compactness afforded by miniaturization.

This steady fall in price, with ever-increasing power has been the one consolation to those in universities and polytechnics who have the responsibility of purchasing equipment for which the prices usually soar exponentially. Purchasers have sought for that crystal ball which will tell them whether to buy now or wait another six months for that cheaper and more powerful machine.

Except for one or two electronic calculators for staff use, the departments of mathematics and statistics with operational research at the Lanchester Polytechnic had, until three years ago, continued to use electro-mechanical calculators. The prospect of a move into a new building with a suite of six calculator laboratories with funds for equipment, led to the formulation of a policy which distinguished between the interests of the numerical analysts and those of the statisticians.

For the first group and their students, the main work-horse was to be the polytechnic's ICL 1903A digital computer. It was considered that the student needs to acquire a feel for numbers, to see, for example, the power of convergence or the control effected by a parameter, which abstract analysis fails to reveal to many. This could most effectively be done by working interactively at an "on-line" terminal.

The numerical mathematics group is currently adapting a set of packages developed at the University of Reading to be used inter *alia* in the study of a first year numerical methods module. Obviously a desk top calculator still has a role to perform in relatively small calculations, for checking and for assistance in programme debugging. The group have found that the Tenko 122, a four function two memory square root calculator, has been sufficient for these tasks for first and second year students.

The statistics components in the CNAA BSc honours degree and its successor, contained within a modular science degree, lay much emphasis on the need for students to test theory and to apply it to practical problems. Staff have tried to ensure that examples used are relevant and that many of the course-work assignments have a genuine flavour of realism.

In earlier days the consequent "data bashing" constituted the exercise as there was little time for anything else. If this could be reduced significantly, perhaps a more detailed analysis or discussion and carefully considered conclusions could be presented to achieve a more effective learning of statistical concepts.

For large practical groups, desk top calculators were seen to be the answer. The initial experience was with 16 Burroughs C3660 on which a 144 step programme can be prepared and then permanently recorded on a magnetic card. Programmes were prepared for mean and standard deviation calculations, Chi-squared testing, paired and unpaired "t" tests, so that for a practical class on a particular topic, the appropriate card was circulated to each student to feed the programme into his calculator.

More recently the Sumlock Compucorp 340 or 344 Statistician calculators, with hard wired statistical function keys have been extensively used. Therefore, as had been hoped, more could be accomplished, but it soon became apparent that a drastic reappraisal of the objectives of practical work was necessary. This proved to be valuable as the department moved to a greater use of coursework as a method of assessment.

Most disciplines will now admit that to quantify in appropriate areas is to obtain a greater insight into the nature of their studies. Although we have been aware of this for many years at Lanchester in urban and regional planning, in geography and in biology, it has only been since sufficient numbers of calculators have become available that we have been able to take students beyond the appreciation stage of numerical techniques and involve them intimately in the problems.

An increasing measure of integration between statistics and biology is being achieved in the lecture and practical programme in the first year of the modular science degree; its success has led the department of applied biology to purchase two Compucorp 325 programme calculators with display, print-out and a tape cassette unit which stores data as well as programmes. Using programmes written by staff it is hoped that a well motivated student will seek to learn more about the reliability of his regression coefficients by calling in an extra programme tape or, alternatively, obtain an analysis of a complex experimental design.

Many first year students in the arts and social sciences have not performed even simple calculations for at least two years and then only with limited success, if their O-level results are reliable indicators. To have to convert a fraction into a percentage or a ratio into a decimal in order to compare, say business performance, has often been too much for many of them.

One of the greatest blessings of an electronic calculator has been its ability to break down the numeracy barrier which many students hide behind and to recreate confidence in their ability to cope with numerical situations. However, reverse Polish notation does little to answer the problems of this type of student; fortunately there is a wide range of true algebraic logic calculators from which students can choose.

The department of civil engineering and building have been using pocket calculators since they were first introduced. Ten CBM C110 calculators continue to give reliable service having been initially purchased for surveying. As they have become more sophisticated these have been added to (CBM SR6, HP65) enabling complex survey calculations to be made at the foot of the theodolite.

Experience in a number of departments has shown that the advent of programmable calculators, each with their own ephemeral machine code has not led to a realisation of their potentialities by students. It is clear that unless it is possible to programme in BASIC or some other internationally recognised language, the programming is better left to the lecturer.

The most important recent development has been the extensive purchase of calculators by students. It has supplanted the slide-rule, long espoused by engineers and scientists and finds a ready market among students of the newly numerate disciplines. Frequent reference has been made in *The THES* to the problem this has created in the organization and conduct of examinations at all levels. It is for those subjects other than numerical methods or statistics, in which there are many incidental calculations, that the decision has to be made. Is the calculator simply a substitute for the slide rule? Are some students gaining an unfair advantage?

At Lanchester, the Academic Board finally resolved, after much deliberation "that students should be permitted to take pocket calculators into examinations, with the exception of programmable calculators, and that the examiner is entitled to specify the maximum capabilities of calculators that can be used in his examination".

The author is principal lecturer, department of statistics and operational research, Lanchester Polytechnic.

Foreseeing tomorrow's problems

Peter New

To ensure that the right pocket calculator is purchased it is important to be clear what problems it should be able to solve, not only those of today, but those likely to arise tomorrow. The calculator should have all the pre-programmed functions, memories and other features required to solve problems quickly, easily, accurately and without confusion.

If problems only involve addition, subtraction, multiplication, division, and possibly percentages, then the need is for a basic calculator. It should be well made, preferably rechargeable and ergonomically designed to operate on a desk one handed, with a clear, bright display, correctly angled with well-formed unambiguous characters. The choices offered by the leading manufacturers are sufficiently wide both in price and functions to eliminate the need to buy "toy" calculators of dubious origin and reliability, with little hope of obtaining after-sales service facilities.

If problems extend beyond basic arithmetic, then the need is for a professional pocket calculator designed for continuous use. Professional calculators are designed with a specific capability required to quickly and easily solve problems intrinsic to a specific application or discipline. There are four main types of professional calculators:

Scientific: A professional scientific calculator should be pre-programmed with all of the standard logarithmic and trigonometrical functions, so there is no need to refer to tables or interpolate from those tables. Just press the keys to get answers—an answer far more accurate than a slide rule can give. These full scientific calculators are also pre-programmed with exponential, square root, reciprocal, raising to power functions (including fractional powers) and have a memory. A new generation of scientific calculators is appearing with such additional functions as polar/rectangular coordinate conversion, hyperbolic functions and more than one memory. Some work in grads as well as degrees and radians.

Business: There are an increasing number of business or financial calculators appearing which have specialized capabilities useful to the non-scientific user. These include percentage, percentage difference, simple statistics such as mean, standard deviation and trend line keys. They also have keys for solving financial problems such as interest rates, compounding, depreciations, and cash flow. Some have built-in calendars.

Statistical. Statistics have become increasingly essential to a very wide range of disciplines which one does not normally associate with numeracy. This requirement for a statistical calculator has been recognized by calculator manufacturers and it is possible to purchase calculators pre-programmed not only with mean, standard deviation and trend line keys, but also such functions as regression, logarithmic and power curves, random number generators and permutation keys, variance and factorial.

Multi-discipline. These are the latest generation of machines to be introduced. They have many more functions and more memories than the earlier machines: they are pre-programmed with functions for more than one specialisation, for example science and statistics, and as such are extremely useful for those engaged in such tasks as engineering research, where statistics are necessary to the basic discipline.

Within this category, we should also include programmable calculators, particularly key stroke programmables. These are in effect, multi-function machines which can be tailored to individual needs by writing in the programmes to provide the desired functions.

Logic systems.—A logic system is the "language" used to communicate with a calculator—the way in which problems are keyed in and the way the calculators are designed to handle them. One logic system may require an equation to be restructured to conform to the system; another may not.

The two most common logic systems used in professional pocket calculators are algebraic and reverse Polish. Both types should be studied to determine which is the easiest to use (especially important when solving complex problems).

Finally, the other aspects to be considered in choosing a professional calculator are quality—the physical construction of the calculator (is it rugged enough for daily use?) and the availability of after-sales service and accessories. Is it supplied complete with a detailed applications guide and instruction book?

The author is sales director of Taylor-Wilson Systems Ltd.

Classified Advertisements

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3. SENIOR LECTURER IN PHYSICS DEPARTMENT
Applicants should have a good first degree in Physics, together with a PhD or its equivalent. Considerable experience of teaching Physics and/or research at University level is essential. An interest in, or experience in Teacher Education would be an advantage.

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5. LECTURER IN LANGUAGES AND LINGUISTICS DEPARTMENT
Applicants should have a postgraduate degree, preferably a PhD or its equivalent. The appointee will be expected to teach Stylistics, Language use, and Linguistics to undergraduate students.

6. PROFESSOR IN LITERATURE DEPARTMENT
Applicants should be holders of a postgraduate degree, preferably PhD in Literature and should have experience in teaching at a recognised university. The appointee will be expected to teach Literature and to initiate and direct research in this field for both graduates and undergraduates.

7. SENIOR LECTURER IN LITERATURE DEPARTMENT
Applicants should be holders of a postgraduate degree in Literature and should have experience in teaching at a recognized university. The appointee will be expected to teach any of the areas of Literature. Some of the areas are: Theatre Arts, European Literature, African Literature.

8. LECTURER IN LITERATURE DEPARTMENT
Applicants should have a good University degree. Preference will be given to candidates with professional teaching qualifications plus substantial teaching experience. The appointee will be required to teach Methodology in Literature with an added knowledge and interest in ONE of the fields of Literature and in particular any of the following: African Oral Literature, African Drama, and South African Novel.

9. LECTURER IN LITERATURE DEPARTMENT
Applicants should have a postgraduate degree preferably a PhD in Literature. The appointee will be expected to teach any of the following areas of Literature: European Literature, African Oral Literature, African Drama, South African Novel.

10. PROFESSOR OF EDUCATIONAL PSYCHOLOGY
Applicants should have a PhD degree (or its equivalent) in Educational Psychology plus substantial experience in teaching and research at University level. Ability and enthusiasm to plan, initiate and direct research as well as ability to plan and execute new programmes for both graduates and undergraduates are essential requirements. Preference will be given to candidates who have qualifications and experience in the following areas: measurements and statistics, guidance and counselling, personality, perception.

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Applicants should have a good degree or its equivalent in any field of Fine Art plus substantial experience in teaching at University level. Preference will be given to candidates who can teach one or more of the following: Painting and allied subjects, Graphics, Design, Textile Design and Sculpture.

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Applicants should have a good degree or equivalent in Textile Design, preferably with specialisation in Weaving and Painting and Textiles, plus experience in teaching in an institution of Higher Education. The appointee will be responsible for teaching of Textiles Design and allied subjects to undergraduates and initiate research in woven textiles or in any field of Textile Design.

15. LECTURER IN PHYSICAL EDUCATION
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Applicants should hold a postgraduate degree in Home Economics or a related discipline including one or more of the following areas: Foods and Nutrition, Clothing and Textiles, Home Management, Family relations. Experience in teaching in an institution of higher education is desirable. Qualifications in educational profession will be an additional advantage.

17. SENIOR LECTURER IN BUSINESS EDUCATION (Accounting and Economics)
Applicants should have a good first degree and a post-graduate qualification in Advanced Accounting and Economics. Appointee will be expected to teach Introductory Accounting, Economics, Computer concepts, Finance and Marketing and to assist in the supervision of practical teaching in Business Education. Wide experience in teaching at University level is desirable.

18. LECTURER IN BUSINESS EDUCATION (Accounting and Economics)
Applicants should have a minimum of first degree in Business Education plus postgraduate professional qualification. Appointee will be expected to teach Content and Methodology in first degree students. Experience in teaching Business Education at Secondary or post Secondary School level and/or in a Teacher Education institution would be an advantage.

19. LECTURER IN BUSINESS EDUCATION (Secretarial)
Applicants should have a minimum of a first degree and in addition a specialization in Secretarial Science (Pitman Shorthand) and ability to demonstrate a high level of skill in Typewriting and Shorthand. Appointee will be expected to teach content and methodology to undergraduates up to degree level and assist in the supervision of practical teaching in Business Education. Experience in teaching Business Education at Secondary or post Secondary School level and/or in a Teacher Education institution would be an advantage.

Salary scales: Professor K£4,300-K£5,100 p.a. Senior Lecturer K£2,772-K£3,600 p.a. Lecturer K£1,800-K£3,036 p.a. (K£1=1.19 sterling). The British Government may supplement salaries of appointees to posts 1 to 11 in range £3,124-£3,234 p.a. (sterling) for married appointees or £1,038-£1,986 p.a. (sterling) for single appointees (normally free of all tax) and provide children's education allowances and holiday visit passages. This supplementation is unlikely to be applied to the salaries of appointees to posts 12 to 19. FSSU. Family passages; various allowances. Detailed applications (3 copies) including a curriculum vitae and naming 3 referees should be sent by air mail, not later than 29 December, 1975, to the Registrar, Kenyatta University College, PO Box 43844, Nairobi, Kenya. Applicants should ask referees to send their references direct to the Registrar, without delay. Applicants resident in UK should also send 1 copy to the Inter-University Council, 90-91 Tottenham Court Road, London W1P 0DT. Further particulars are available from either address.

THE UNIVERSITY OF LANCASTER

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Applications are invited for one of the three chairs in the Department of Accounting and Finance, the vacancy arising because of the translation of Professor Edward Stamp to the J. Arthur Rank Research Professorship in Accountancy. The post is tenable from 1st September 1976 or such earlier or later date as may be arranged.

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Chairman of the Department of English

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Chairman of the Department of English

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Perth

FORESTS DEPARTMENT POSTGRADUATE RESEARCH FELLOWSHIP IN BOTANY

Applications for the above-mentioned FELLOWSHIP are invited from graduates with a first-class or upper division second-class honours degree in Botany, and Forestry or Agriculture graduates whose courses of study have extended over at least four years and who have had appropriate research experience. The Fellowship, financed by the Forests Department of Western Australia, will be tenable for one year initially with prospects of renewal for up to two further years. The value of the Fellowship is $A3,250 per annum. The Fellow will be required to undertake research in a field covering mycological, physiological or ecological aspects of tree growth in relation to multiple use forestry, or such other fields as may be prescribed. Further information may be obtained from the Head of the Department of Botany, Professor J. S. Pate, in the University.

Applications in triplicate stating personal particulars, academic record, research experience, work proposed, etc., should reach the Staffing Officer, University of Western Australia, Nedlands, Western Australia, 6009, by 10 January, 1976. Candidates should request two academic referees to write immediately to the Staffing Officer, in the University.

Conditions of appointment may be obtained from the Association of Commonwealth Universities (Appts.), 36 Gordon Square, London WC1H 0PF.

AMERICA

UNIVERSITY OF CALIFORNIA
Irvine

The School of Social Sciences, an interdisciplinary unit of the Irvine Campus of the University of California, has a position for an ASSISTANT PROFESSOR in the general area of social organization of human behaviour. Candidates' research interests should have a theoretical orientation rather than be strongly applied or policy related. Candidates should also have strong research training in either sociology or social anthropology. The school is seeking a scientist who will pursue an active programme of research and graduate training and who will teach undergraduate sociology courses.

Applications from all qualified candidates are welcome; minorities and women are encouraged to apply. Send curriculum vitae and the names of at least three references to Dean Christian Warner, School of Social Sciences, University of California, Irvine 92717, before February 1, 1976.

AUSTRALIA

MONASH UNIVERSITY
Melbourne

DEPARTMENT OF PHILOSOPHY

TUTORS/SENIOR TUTORS

Applicants must possess a good honours degree and should be available to take up duty in March, 1976. Duties will include some first-year tutoring in general philosophy.

Salary: Senior Tutor $A10,484 to $A12,063 per annum with superannuation. Tutor $A8,578 to $A10,186 per annum. Travelling and removal allowance. Repatriation. Assistance with temporary housing. Information and application procedure available from the Academic Registrar, Monash University, Wellington Road, Clayton, Victoria 3168, Australia, or the Secretary-General, Association of Commonwealth Universities (Appts.), 36 Gordon Square, London WC1H 0PF.

Enquiries about the department to the Chairman, Professor D. H. Monro. Closing date: 19 December, 1975. The University reserves the right to make no appointment or to appoint by invitation.

AUSTRALIA

UNIVERSITY OF WESTERN AUSTRALIA
Perth

Applications are invited for appointment to a CHAIR IN CIVIL ENGINEERING. This is one of two Chairs in the Department of Civil Engineering, the other being held by the current Head, Professor D. H. Clyde. The Department is one of three in the Faculty of Engineering, the other two being Electrical and Electronic Engineering and Mechanical Engineering. Preference will be given to applicants with special interests in the field of water resources but applications will be considered from candidates in other fields of Civil Engineering. Detailed information on the teaching and research activities of the Department and conditions of appointment may be obtained from the Staffing Officer, in the University, or from the Association of Commonwealth Universities (Appts.), 36 Gordon Square, London WC1H 0PF.

The salary for a Professor is $A24,304 per annum. Benefits include superannuation similar to F.S.S.U., fares to Perth for appointee and dependent family, removal allowance, study leave and long service leave and housing loan scheme.

Applications in duplicate stating full personal particulars, qualifications, experience and the names and addresses of three referees should reach the Staffing Officer, University of Western Australia, Nedlands, Western Australia, 6009, by 10 January, 1976.

Universities continued

AUSTRALIA

UNIVERSITY OF QUEENSLAND

SENIOR LECTURER IN SOCIAL WORK

Applicants should have a higher degree and professional qualifications in Social Work with experience in Community Work. 11 January 1976.

Salary: $A16,612 to $A19,193 per annum.

Other Benefits: Superannuation similar to F.S.S.U., housing assistance, study leave, travelling and removal expenses.

Additional information and application forms are obtainable from the Association of Commonwealth Universities (Appts.), 36 Gordon Square, London WC1H 0PF.

AUSTRALIA

UNIVERSITY OF WESTERN AUSTRALIA
Perth

ORGANIC CHEMISTRY

Applications are invited for appointment as SENIOR TUTOR in the Department of Organic Chemistry. This is a temporary appointment for the year 1976 and the appointee can expect to spend half time on research. The salary range for a Senior Tutor is $A10,484 to $A12,063 p.a. An appointee from within Australia would be entitled to fares for himself and wife and from elsewhere to appointment expenses up to $A1,475.

Applications in duplicate stating full personal particulars, qualifications and experience should reach the Staffing Officer, University of Western Australia, Nedlands, Western Australia, 6009, by December 20, 1975. Candidates should request three referees to write immediately to the Staffing Officer.

AUSTRALIA

MURDOCH UNIVERSITY
Perth, Western Australia

Murdoch University, Western Australia's second university, admitted its first students in February, 1975. The University is committed to taking a fresh approach to higher education, with the goal of responding directly to the conditions and needs of the late twentieth century. This is reflected in admission policies, organisational structures, programmes of study, philosophies of teaching and recruitment of staff.

The University is organised on a system of schools of study, with the Chairman of each school having both academic and administrative responsibility.

SCHOOL OF MATHEMATICAL AND PHYSICAL SCIENCES
(Chairman: Professor A. J. Parker)

POST-DOCTORAL FELLOWSHIP—CHEMISTRY IN NON-AQUEOUS SOLVENTS
(Ref EN.0383)

Application are invited from suitably qualified chemists for a POST-DOCTORAL FELLOWSHIP to carry out research into chemistry in non-aqueous solvents. The Fellow would work with a group led by Professor A. J. Parker. The interests of this group include solution thermodynamics, molar volumes, analytical methods, electrochemistry, rates and equilibria, hydrometallurgy and solvent extraction. Equipment includes a PAR 170 Electrochemical system, and LKB calorimeter, an AKUVPE Solvent Extraction Unit, spectrometers, and an Anton Paar Densimeter. A Fellow with experience and/or a strong interest in electrochemistry or calorimetry would be preferred.

Applicants should possess a Ph.D. or have equivalent research experience. The position is tenable for two years with the prospect of extension to three years, and is to be taken up on February 16, 1976, or as soon thereafter as possible. There are opportunities to gain teaching experience at the new Murdoch University if desired.

Further details can be obtained from Professor A. J. Parker, Murdoch University, Murdoch, Western Australia, 6153.

Salary Range: $A10,484 to $A12,063 per annum.

Conditions of Appointment include payment of fares to Perth for appointee and dependant family.

Applications: Two complete sets of detailed applications, quoting the appropriate reference number, including full personal particulars, details of tertiary qualifications, career history with description of posts held, area of special competence and interest, research completed or currently being undertaken, membership of professional institutions or societies and positions of responsibility in these; list of relevant material published by the applicant; when available to take up appointment if offered and the names and addresses of two professional referees should reach the Personnel Officer, Murdoch University, Murdoch, Western Australia, 6153, by January 26, 1976.

Applicants should request two professional referees to write immediately, quoting the appropriate reference number, to the Personnel Officer, Murdoch University.

BATH

THE UNIVERSITY

SCHOOL OF MODERN LANGUAGES

LECTURER IN FRENCH

Applications are invited for the post of Lecturer in French in the School of Modern Languages. Candidates should have special interests in the field of French language. The successful candidate will be required to commence duties as soon as possible.

Salary in the lower part of the range £2,778 to £6,050 plus £83.52 per annum threshold payment, according to qualifications and experience.

Further particulars and application forms may be obtained from the Personnel Officer, University of Bath, Bath, BA2 7AY, quoting reference number THES/75/170. Closing date for applications: 31st December 1975.

BRISTOL

THE UNIVERSITY

SCHOOL FOR ADVANCED URBAN STUDIES

LECTURESHIPS IN URBAN STUDIES

The School wishes to appoint up to five Lecturers in Urban Studies to assist in developing a programme of post-experience teaching and research.

Applicants should be well qualified in one of the basic disciplines relevant to urban studies and should be able to demonstrate special knowledge in one or more of the following areas: Transport Policy; Housing Policy; Social Policy; Organisational Studies; Public Sector Finance.

Experience in the Civil Service or in local government would be an advantage.

Initial salary will be according to age, qualifications and experience on the scale for University Lecturers: £2,778 to £6,050 per annum plus £83.52 per annum threshold payment (under review).

Suitably qualified candidates should submit applications by December 19, 1975, to the Secretary, University of Bristol, Senate House, Bristol, BS8 1TH from whom further particulars may be obtained.

BRISTOL

THE UNIVERSITY

DEPARTMENT OF EXTRA-MURAL STUDIES

STAFF TUTORSHIP in SOCIOLOGY

The University invites applications for this appointment from persons holding good academic qualifications in Sociology or some branch of Sociology.

The person appointed will teach, supervise and develop courses of study for adults in the sociological field throughout the University's extra-mural region. The Department already has in being a considerable volume of work, both pure and applied. The present vacancy arises through the appointment of the existing Staff Tutor to a post in another university.

The post carries the salary and status of University Lecturer. The present salary scale is £2,778 to £6,050, plus £83.52 threshold supplement (scale is under review from October 1, 1975). It is expected that the initial salary will be within the range £2,778 to £4,206.

Applications, with the names of three referees, should be sent not later than December 19, 1975, to the Secretary, University of Bristol, Senate House, from whom further particulars may be obtained (please quote reference EB).

CANADA

SIMON FRASER UNIVERSITY

HISTORY DEPARTMENT

will appoint

ASSISTANT PROFESSOR CANADIAN HISTORY

General qualifications in Canadian History required. Preferred but not essential specialization in History of British Columbia or French Canada.

Applications during Canadian mail strike to be sent to: Simon Fraser University, Department of History, care of Omnico Services, Box 409, Burlington, Washington 98233, U.S.A. Closing date for receipt of applications, 31 December, 1975.
P. Auty, Chairwoman History Department, Simon Fraser University.

CAPE TOWN

THE UNIVERSITY

The Council of the University of Cape Town wishes to appoint a

GENERAL MANAGER

for the Baxter Theatre/Concert Hall which is under construction at Rondebosch as a result of a generous bequest of Dr Duncan Baxter.

The Complex comprises a proscenium theatre to seat 657 and a concert hall to seat 630 people, and in addition to theatre and concert facilities will provide accommodation for exhibitions, conferences, etc.

The General Manager will be responsible to a Governing Board for the general administration and operation of the Theatre/Concert Hall.

It is intended that he should take up his duties as soon as possible after appointment in order to advise on staffing and equipment and to set up a full programme of management for the Complex which will be opened to the public in 1977.

The salary of the post is R9 900 x 450 to R12 600 per annum and benefits include vacations savings bonus, pension and medical aid schemes, and generous leave conditions. A memorandum giving further details of the post of General Manager is available on application.

Written applications should be addressed to: The Registrar, University of Cape Town, Private Bag, Rondebosch 7700, to reach him not later than 16th January, 1976.

EDINBURGH

THE UNIVERSITY

DEPARTMENT OF ENGLISH LITERATURE

LECTURER

Applications are invited for the post of Lecturer in English Literature. The successful candidate should take up his duties in October 1976 or as soon as possible thereafter. Preference will be given to candidates whose main field of interest lies in English Literature before 1800.

Salary will be within the range £2,862 to £6,135 with superannuation.

Applications, by letter (eight copies) together with the names of two referees, should be sent, not later than 19th January 1976, to the Secretary to the University, University of Edinburgh, Old College, South Bridge, Edinburgh, EH8 9YL, from whom further particulars may be obtained. Please quote reference 1063.

LONDON

THE UNIVERSITY

CHAIR OF FRENCH AT QUEEN MARY COLLEGE

The Senate invites applications for the above Chair tenable from 1 October, 1976.

Applications (10 copies) should be received not later than 12 December, 1975, by the Academic Registrar (THES), University of London, Senate House, London WC1E 7HU, from whom further particulars may be obtained.

EDINBURGH

THE UNIVERSITY

LECTURESHIP IN ECONOMICS

Applications are invited for the post of Lecturer in the Department of Economics. Candidates should have an interest in teaching and researching in economic theory, broadly defined.

Salary in the range £2,862 to £6,135 (under review). Superannuation under FSSU or USS.

Further particulars may be obtained from the Secretary to the University, University of Edinburgh, Old College, South Bridge, Edinburgh EH8 9YL, to whom applications (three copies), naming two referees, should be sent not later than 12th January, 1976. Please quote reference 1064.

GLASGOW

SENIOR LECTURESHIP OR LECTURESHIP IN PRINCIPLES OF RELIGION

THE UNIVERSITY

Applications are invited for a Senior Lectureship or Lectureship in the Department of Principles of Religion in the Faculty of Arts. The salary will be on the Senior Lecturers' scale of £5,923 to £7,430 per annum (under review), or the Lecturers' scale of £2,862 to £6,134 per annum (under review). Initial salary will be fixed according to experience and qualifications. Appropriate Superannuation Scheme will apply.

The Lecturer will be in charge of a small department providing courses at all levels for the M.A. Degree. The courses cover the nature and functions of religion and offer a comparative study of religions, with special attention to the Biblical tradition and Christianity.

Further particulars may be had from the Secretary of the University Court (Room 11), the University of Glasgow, Glasgow G12 8QQ, with whom applications (eight copies), giving the names and addresses of three referees should be lodged on or before December 15, 1975.

In reply please quote Ref. No. 3751.

LANCASTER

THE UNIVERSITY

DEPARTMENT OF GEOGRAPHY

Applications are invited for TWO LECTURESHIPS in the new DEPARTMENT of GEOGRAPHY, which admitted its first undergraduates in October this year. As well as contributing to first-year teaching, the successful applicants will be expected to develop their specialist research interests in the university and to participate in the design and teaching of second and third-year courses.

One of the appointments will be made in APPLIED PHYSICAL GEOGRAPHY; applicants with an interest in Resource Management or Biogeography would be particularly welcome, although other fields are not ruled out. The second lectureship will be in HUMAN GEOGRAPHY, with special reference to the application of quantitative methods of geographical problems. Research interests outside the British Isles would be an attractive additional qualification for at least one of these appointments.

Salary within the range £2,778 to £6,050 (under review) plus U.S.S. One lectureship will probably be filled close to the bottom of the scale and the other at a more senior level on the lecturers scale.

Further particulars may be obtained (quoting reference L3/C) from the Establishment Officer, University House, Lancaster LA1 4YW, to whom applications (five copies), naming three referees, should be sent not later than 15 December, 1975.

LANCASTER

THE UNIVERSITY

INTERNATIONAL MICRO-TEACHING RESEARCH UNIT

Applications are invited for the post of RESEARCH ASSOCIATE to work on a project concerned with the international transfer of self-instructional microteaching materials developed by the above unit. The project, which is directed by Professor Elizabeth Perrott, is supported by a grant from the Leverhulme Trust.

Applicants should be graduates of a British University with qualifications in Education. A sound knowledge of research methods and evaluation techniques is essential. Experience of teacher training in a developing country and/or in the production of programmed materials would be an advantage. The appointment, which is an addition to the present staff of the unit, will be for two years from January 1, 1976, or as soon as possible thereafter. Secondment from an existing post will be acceptable.

Salary in the range £2,370 to £3,504 (under review) plus USS benefits. Starting salary according to qualifications and experience.

Further particulars may be obtained (quoting reference L1/C) from the Establishment Officer, University House, Lancaster LA1 4YW, to whom applications (five copies), naming three referees, should be sent not later than December 10, 1975.

LONDON

CHELSEA COLLEGE
UNIVERSITY OF LONDON

ASSISTANT IN THE ACADEMIC REGISTRAR'S DEPARTMENT

Applications are invited for this post, with responsibilities mainly in statistical inquiry and in work related to Senate committees. Previous experience and qualifications in data-handling, statistics, or similar fields would be an advantage.

Salary scale £3,265-£3,810 p.a. (inclusive of London Allowance).

For further particulars please write to Personnel Officer, Chelsea College, Manresa Road, London SW3 6LX, to whom applications should be sent by 4th December, 1975.

LONDON

THE UNIVERSITY

CHAIR OF MECHANICAL ENGINEERING AT KING'S COLLEGE

The Senate invites applications for the above Chair which becomes vacant in October, 1976.

Applications (10 copies) should be received not later than 10 December, 1975, by the Academic Registrar (THES), University of London, Senate House, London WC1E 7HU, from whom further particulars may be obtained.

LONDON

THE UNIVERSITY

CHAIR OF BOTANY AT ROYAL HOLLOWAY COLLEGE

The Senate invites applications for the above CHAIR which becomes vacant in October 1976.

Applications (ten copies) should be received not later than 11 December 1975, by the Academic Registrar (THES), University of London, Senate House, London WC1E 7HU, from whom further particulars may be obtained.

LONDON

THE UNIVERSITY

CHAIR OF MATHEMATICS AT LONDON SCHOOL OF ECONOMICS AND POLITICAL SCIENCE

The Senate invite applications for appointment to the above Chair from 1 October, 1976. Preference will be given to pure mathematicians interested in areas which have applications in the social sciences.

Applications (ten copies) should be received not later than 18th December 1975, by the Academic Registrar (THES), University of London, Senate House, London WC1E 7HU, from whom further particulars may be obtained.

LONDON

THE UNIVERSITY

QUEEN MARY COLLEGE

PURE MATHEMATICS

Applications are invited for a Lectureship tenable from October 1, 1976. Appointment at a salary above the first 6 points on the scale, £3,778 to £6,050 per annum plus £300 London Allowance (under review), possible.

Further details and application forms available from the Registrar (T.H.E.S.), Queen Mary College, Mile End Road, London E1 4NS to be returned by January 2.

LONDON

THE UNIVERSITY

WARBURG INSTITUTE

CHIEF LIBRARIAN

Applications are invited for the post of LIBRARIAN (academic) OF THE WARBURG INSTITUTE from October 1 1976. Candidates should be established scholars in one of the disciplines covered by the Institute. Salary in the Readership range.

Further particulars may be obtained from the Secretary, Warburg Institute, Woburn Square, London WC1H 0AB. Applications, naming two referees, should reach the Director by 30 January 1976.

LONDON

THE UNIVERSITY

READERSHIP IN PHYSICAL ANTHROPOLOGY AT UNIVERSITY COLLEGE

The Senate invites applications for the above READERSHIP tenable in the Department of Anthropology.

Applications (10 copies) should be received not later than 5 January, 1976 by the Academic Registrar (THES), University of London, Senate House, London WC1E 7HU, from whom further particulars may be obtained.

MANCHESTER

THE UNIVERSITY

INSTITUTE OF SCIENCE AND TECHNOLOGY

LECTURER in QUANTITATIVE METHODS IN LINGUISTICS

For a new degree course starting 1976 the Department requires an experienced lecturer to teach inter alia general linguistics, computing for linguistic purposes, statistical linguistics and a modern European language.

Salary £2,778 to £6,050 per annum (under review).

Application forms and further particulars obtainable from the Registrar, UMIST, P.O. Box 88, Manchester M60 1QD. Closing date December 19, 1975. Quote reference ES/106/CJ.

NEW ZEALAND

UNIVERSITY OF CANTERBURY
Christchurch

ASSISTANT LECTURER IN MUSIC

Applications are invited for the above-mentioned position. Applicants should be highly accomplished pianists and experienced teachers of the pianoforte.

The salary for Assistant Lecturers is on a scale from NZ$6,638 to $7,007 per annum.

Particulars, including information on travel and removal allowances, study leave, housing and superannuation may be obtained from the Association of Commonwealth Universities (Appts.), 36 Gordon Square, London WC1H 0PF.

Applications close on 10 January, 1976.

MANCHESTER

THE UNIVERSITY

CHAIR OF ECONOMICS

Applications are invited for a CHAIR in the DEPARTMENT of ECONOMICS. Applicants with teaching and research interests in any field of Economics will be considered. The salary will be in the normal professorial range with superannuation benefits.

Applications (one copy suitable for photocopying) giving full details of qualifications and experience and the names and addresses of three persons to whom reference may be made, should be sent, not later than Wednesday, January 14th, 1976, to the Registrar, The University, Manchester, M13 9PL, from whom further particulars may be obtained. Please quote ref: 246/75/THES.

MANCHESTER

THE UNIVERSITY

CHAIR OF GENETICS AND CELL BIOLOGY

Applications are invited for a newly-established Chair in the field of Genetics and Cell Biology in the Faculty of Science.

Applications (3 copies, 1 suitable for photocopying), giving full details of qualifications, experience, research, publications, etc., together with the names and addresses of three persons to whom reference may be made must reach the Registrar, The University, Manchester, M13 9PL, by December 19th, 1975. Further particulars may be obtained from the Registrar. Please quote ref.: 241/75/THES.

OXFORD

MERTON COLLEGE

JUNIOR RESEARCH FELLOWSHIPS AND SENIOR SCHOLARSHIPS 1976

The College proposes, if male candidates of sufficient merit present themselves, to elect to two JUNIOR RESEARCH FELLOWSHIPS and two or three SENIOR SCHOLARSHIPS in 1976.

Details of these awards and of the method of applying for them may be obtained from the Warden's secretary. The closing date for applications will be January 12, 1976.

AUSTRALIA

MURDOCH UNIVERSITY
Western Australia

CHIEF CATALOGUER
(EN. 0021)

Applications are sought for the position of Chief Cataloguer in the library of this new university located 16 km. south of Perth. The library is housed in a new air-conditioned building, has about 70,000 books catalogued, almost no back-log of uncatalogued books, and a staff of 38 of whom 16 are in the Cataloguing Division. There is an annual increment of about 20,000 books. Classification is by Dewey. Cataloguing is by A.L.A. rules and Library of Congress subject headings. There are growing collections of books in Chinese and Malay, and audio-visual materials.

The appointee should have a university degree and recognized qualifications in librarianship together with appropriate experience. In selecting the appointee attention will be given to ability and interest in the rapid output of work, engagement in the profession and the life of the university, and ability to participate in the plans for computerization.

Salary range: $A16,612 to $A19,193 per annum.

Conditions of appointment include removal allowance, settling-in allowances and economy air fares for the appointee and dependent family.

Applications including full personal particulars, a resume of experience, qualifications and work history together with the names and addresses of three referees should reach the Personnel Officer, Murdoch University, Murdoch, W.A. 6153, by 19 December, 1975.

OXFORD

THE UNIVERSITY

VIGFUSSON READERSHIP IN ANCIENT ICELANDIC LITERATURE AND ANTIQUITIES

The electors intend to proceed to an election to the Vigfusson Readership in Ancient Iceland Literature and Antiquities which is now vacant. The stipend of the reader will be on a scale which is at present £5,838 to £7,546 a year.

Applications (10 copies) naming three referees but without testimonials should be received not later than 23 January, 1976, by the Registrar, University Offices, Wellington Square, Oxford OX1 2JD, from whom further particulars may be obtained.

BELFAST

THE QUEEN'S UNIVERSITY

LECTURESHIP IN BUSINESS STUDIES

Applications are invited for a LECTURESHIP in the DEPARTMENT of BUSINESS STUDIES from January 1, 1976, or such other date as may be arranged. Candidates should have qualifications and interests in Organisation Theory, Human Relations, Psychology or generally in the field of Business Studies.

Salary scale is £2,778 to £6,051 with contributory pension rights under the F.S.S.U./U.S.S. Initial placing on the scale will depend on qualifications and experience. Assistance is available with removal expenses.

Applications should be received by December 18, 1975. Further particulars may be obtained from the Personnel Officer, The Queen's University, Belfast BT7 1NN, Northern Ireland. Please quote Ref. 75/THES.

THE OPEN UNIVERSITY

FACULTY OF EDUCATIONAL STUDIES

COURSE ASSISTANTS

Two vacancies exist for Course Assistants to assist in the preparation of the following courses:

EDUCATION and the URBAN ENVIRONMENT (please quote Ref. 70)—also involves maintenance of the existing course E351 Urban Education.

EDUCATION and HUMAN VALUES (please quote Ref. 71)—also involves maintenance of E203 Curriculum Design and Development which will be offered to students in 1976. A qualification in one of the following disciplines would be advantageous: psychology, sociology, philosophy, aesthetics, politics.

Both posts involve the provision of a wide range of administrative services to the Course and Maintenance Teams and should appeal to a graduate interested in an administrative or editorial career. Some knowledge of education would be advantageous.

Salary scale: £2,210.82-£3,077.82 per annum (under review from 1st October 1975) plus membership of the Universities' Superannuation Scheme.

Further particulars and application forms are available from the Personnel Manager (CAES 2), The Open University, P.O. Box 75, Walton Hall, Milton Keynes, MK7 6AL. Telephone: Milton Keynes 63868/9.

Closing date: 12th December, 1975.

THE OPEN UNIVERSITY

STAFF TUTOR IN EDUCATIONAL STUDIES

Applications are invited for a tenured post as Staff Tutor in Educational Studies for the North-West Region.

The main duties of the post will include liaison with members of the central academic staff and assisting the Regional Director in the appointment, training and supervision of part-time tutors.

The Staff Tutor will be appointed to the Faculty but will be organisationally responsible to the Regional Director and will be based at the regional centre in Manchester.

Candidates should combine wide interests in education with a particular knowledge of and special interests in the field of administration and management of education.

Salary will be at a point appropriate to the successful candidate's qualifications and experience on the incremental scale: £2,861.52 to £6,133.56 per annum plus membership of the Universities' Superannuation Scheme.

Further particulars and application forms are available from the Personnel Manager (ESNW1), The Open University, P.O. Box 75, Walton Hall, Milton Keynes MK7 6AL. Telephone Milton Keynes 63868/9.

Closing date December 12, 1975.

SIERRA LEONE

THE UNIVERSITY

NJALA UNIVERSITY COLLEGE

Applications are invited for the post of SENIOR LECTURER/LECTURER in the DEPARTMENT of MATHEMATICS. The appointee will be required to teach mathematics or statistics to prospective secondary school teachers and agriculturists. The person appointed is expected to assume duties on or about 1st January, 1976. (a) Senior Lecturer:

Applicants should preferably be in possession of Ph.D. in Mathematics with teaching experience of at least five years in an institution or institutions of higher learning or institutions involved in training graduate secondary school teachers. They must be able to teach up to at least first degree standard in at least any two of the following branches of Mathematics: Modern Algebra, Analysis, Topology, Geometry, Statistics and Applied Mathematics. However preference is given to the candidate who can teach applied mathematics and any other branch of mathematics. (b) Lecturer: Must be able to teach at least any two of the following courses to first degree standard: Calculus, Modern Algebra, Analysis, Geometry, Applied Mathematics. Preference is given to the candidate who can teach applied mathematics and any other branch of Mathematics. Salary scale: (a) Le5,070 to Le5,170 per annum; (b) Le2,910 to Le5,430 per annum (£1 sterling equals Le2). F.S.S.U. Various allowances; family biennial overseas leave. The British Expatriate Supplementation Scheme is unlikely to be applied to these posts.

Detailed applications (two copies), naming three referees should be addressed to the Secretary, University of Sierra Leone, Private Mail Bag, Freetown, Sierra Leone. Candidates available for interview in the United Kingdom should also send a copy of their application to the Inter-University Council for Higher Education Overseas, 90-91 Tottenham Court Road, London W1P 0DT. The closing date for receipt of applications is 20th December, 1975. Further particulars may be obtained by writing to either address.

SOUTHAMPTON

THE UNIVERSITY

FACULTY OF MEDICINE

Applications are invited for the post of SENIOR LECTURER in PHARMACOLOGY. The person appointed will be required to undertake teaching and research duties in the field of basic pharmacology. Salary £5,838 to £7,346 (seven increments) (subject to review). Superannuation. Initial salary will depend on qualifications and experience.

Further particulars may be obtained from the Administrative Secretary (Lat. 2H/4), The University, Southampton SO9 5NH, to whom applications (seven copies from applicants resident in United Kingdom and one from others) should be sent not later than 20 December, 1975, quoting reference THES/45/75/A.

Universities continued

PAPUA NEW GUINEA
THE UNIVERSITY

SIERRA LEONE
THE UNIVERSITY

TANZANIA
UNIVERSITY OF DAR ES SALAAM

USA

WARWICK
THE UNIVERSITY
LECTURESHIP IN ECONOMICS

WEST INDIES
THE UNIVERSITY

Fellowships and Studentships

UWIST CARDIFF

RESEARCH STUDENTSHIPS

... and application form are obtainable, by quoting discipline and field of interest, from the Academic Registrar, UWIST, Cardiff, CF1 3NU.
Closing date for completed application form is 27th February, 1976.

ST. ANNE'S COLLEGE

Kathleen Bourne Research Fellowship and Scholarships

Applications are invited for the Kathleen Bourne Research Fellowship and Scholarships tenable from Michaelmas Term 1976, in the field of French language and literature or French Architecture, art, history, music and philosophy. Candidates must be women graduates who are citizens of one of the countries or territories of the British Commonwealth or the Republic of Ireland, and must hold a First or Second Class Honours Degree from a British University. Candidates for the Scholarships must be graduates of not more than four years standing, and those about to graduate are eligible to apply. Further particulars may be obtained from the College Secretary, St. Anne's College, Oxford to whom applications should be submitted not later than 31st January, 1976.

OXFORD
WADHAM COLLEGE
OFFICIAL FELLOWSHIP IN LAW

HEALTH EDUCATION COUNCIL

Polytechnics

Lothian Regional Council

Napier College of Commerce and Technology

EDUCATIONAL DEVELOPMENT OFFICER
(REF. M/1/2)

The opportunity exists to join a major DEVELOPMENT PROJECT within the NATIONAL DEVELOPMENT PROGRAMME IN COMPUTER ASSISTED LEARNING.

The project follows on a Feasibility Study and aims to extend the scope and application of an existing Mathematics Laboratory which involves cooperative work between Napier College and Falkirk and Paisley Colleges of Technology.

The person appointed will be based at Napier College and will assist with the specification of the mathematical content of the system, the design and preparation of teaching materials, liaison between the cooperating institutions and will have a role in the collection of data for the educational evaluation of the project. Applications from both recent and experienced graduates will be considered. A knowledge of computing though not essential would be an advantage.

This post is initially tenable until November, 1977, and the starting salary will be in the range £2,667-£3,171 or £3,216-£4,125. Placing will depend on qualifications and experience.

Further particulars and application forms from the Academic Registrar, Napier College of Commerce and Technology, Colinton Road, Edinburgh EH10 5DT, to whom applications should be returned within 14 days of this advertisement, quoting reference number.

NEWCASTLE UPON TYNE POLYTECHNIC

Department of Behavioural Studies

PRINCIPAL LECTURER IN APPLIED SOCIAL SCIENCE

Required for a post which combines the planning and subsequent course tutorship of the social/community work component of a proposed CNAA degree in Applied Social Science.

Applicants should be, preferably, graduates in possession of appropriate professional qualifications in social work linked to an interest in social policy and administration but persons without a qualification in social work will be considered. Applications are encouraged from persons working in social work agencies in addition to those currently located in academic institutions.

Department of Nursing and Welfare Studies

RESEARCH ASSOCIATE

The successful candidate will be expected to have experience and/or relevant qualifications in the fields of social work and community work, and will be interested in organizing and carrying out research projects to identify needs in the community—in particular in the aged population—and to evaluate the relative merits of statutory and voluntary plans to meet these needs. The post is in the Division of Social Work and is connected with research activity into community problems in and around North and South Tyneside.

The appointment is for three years only.

Burnham F.E.
Principal Lecturer, £5,940-£6,642 (bar)-£7,578.
Research Associate (Lecturer II Scale), £3,279-£5,493.

For further particulars and application form returnable by Friday, 12th December, 1975, send stamped addressed foolscap envelope to Staffing Officer, Newcastle upon Tyne Polytechnic, Ellison Building, Ellison Place, NEWCASTLE UPON TYNE NE1 8ST.

Bristol Polytechnic

DEPARTMENT OF CONSTRUCTION & ENVIRONMENTAL HEALTH

HEAD OF DEPARTMENT (GRADE VI)

Applicants should be well qualified both academically and professionally. They should have a close working knowledge of the construction industry with particular reference to building and normally would be expected to be experienced teachers. The person appointed will have the opportunity to lead an enthusiastic group of staff engaged in the development of degree and diploma and TEC courses and in the design of new accommodation for the Department.

Salary Scale: Head of Department Grade VI—£8,037-£8,913

Further details and application forms (to be returned by 12 December 1975) from Personnel Office, Bristol Polytechnic, Ashley Down, Bristol BS7 9BU.
Please quote Post Reference Number A83/190 in all communications.

ABERDEEN ROBERT GORDON'S INSTITUTE OF TECHNOLOGY

SCOTT SUTHERLAND SCHOOL OF ARCHITECTURE

BUILDING ECONOMICS SECTION

LECTURER IN QUANTITY SURVEYING

for BSc (CNAA) Course and Diploma Course giving exemption from Quantity Surveying professional examinations.

Applicants should be professionally qualified and experienced and have a progressive approach. Further study, research and consultancy are encouraged.

Salary in range £3,216-£6,495 per annum.

Assistance with removal expenses.

Details from Director,
Robert Gordon's Institute of Technology,
Schoolhill, Aberdeen AB9 1FR.

THE POLYTECHNIC HUDDERSFIELD

Department of Education

PRINCIPAL LECTURERS/ SENIOR LECTURERS—ACA/68

Applications are invited from good honours Graduates in Psychology, Philosophy or Sociology with extensive teaching experience in the Middle and/or Secondary age ranges. Applicants highly qualified in Curriculum Studies would also be welcome. Experience in teaching Developments in History, Geography or Environmental Studies; in urban and immigrant education; in educational research; in the supervision of educational research; in teaching to higher degrees in education; or in the provision of in-service professional courses for teachers would also be of value.

SENIOR LECTURER/LECTURER II IN FIRST SCHOOL EDUCATION—ACA/69

Applications are invited from well qualified Graduates with extensive teaching experience at First School, especially Infant, level to work as members of teams of Tutors preparing students for the Certificate in Education and BEd degrees. There may be opportunities for contribution to higher degree and research programmes. Experience or interest in the provision of in-service professional courses for teachers would also be of value.

Salary: PL £5,940-£6,642 (Bar)—£7,578
LII/SL £3,279-£5,031 (Bar)—£5,955 (Bar) £6,417

Further details and application forms, which should be returned within 14 days, from The Establishment Office, The Polytechnic, Huddersfield HD1 3DH (Telephone 0484 30501, Ext. 307).

dundee college of technology

Applications are invited from candidates possessing a good honours degree, or its equivalent, and teaching, professional, industrial, or research experience.

LECTURESHIP IN ACCOUNTANCY

Experience in Management Accounting or in the development of Management Information Systems using computer techniques is desirable. The person appointed will be expected to contribute to the development of a new degree in Accounting.

LECTURESHIP IN BUSINESS STUDIES

Applicants should be able to offer one or more of Marketing, Distribution, Corporate Strategy and Planning, Organisation Theory & Practice; and contribute to the development of his subject areas.

Salary Scale: Lecturer (A) £3,216-£6,012 (bar)—£6,495, with initial placing dependent upon approved prior experience. Financial assistance towards the cost of removal expenses may be payable.

Further particulars and application form obtainable from the Principal, Dundee College of Technology, Bell Street, Dundee, DD1 1HG, to whom completed application forms should be returned not later than 12th December, 1975.

BIRMINGHAM
CITY OF BIRMINGHAM POLYTECHNIC
DEPARTMENT OF ECONOMICS AND SOCIAL SCIENCE
LECTURER II IN HEALTH VISITING

LEICESTER
THE POLYTECHNIC
SCHOOL OF BUILDING SURVEYING AND LAND ECONOMY
SENIOR LECTURER/LECTURER II IN ESTATE MANAGEMENT (VALUATIONS)

Polytechnics continued

WOLVERHAMPTON
THE POLYTECHNIC
LECTURER (Grade II) in MICROBIOLOGY

SUNDERLAND
THE POLYTECHNIC
FACULTY OF ENGINEERING
PRINCIPAL LECTURER IN TOWN PLANNING

PRESTON
THE POLYTECHNIC
COMPUTING SERVICES UNIT

SHEFFIELD
THE POLYTECHNIC
SCHOOL OF BUSINESS AND MANAGEMENT STUDIES
LECTURER II IN APPLIED PSYCHOLOGY

Colleges and Departments of Art

LONDON
INNER LONDON EDUCATION AUTHORITY
ST. MARTIN'S SCHOOL OF ART

Colleges of Further Education

EAST SUSSEX COLLEGE OF HIGHER EDUCATION

East Sussex

Director:
G. R. Tyler, B.A. Dip. Ed. MBIM FRSA

Deputy Director

Salary within the Burnham range for Group 7 (£9,003-£9,483)

Chief Administrative Officer

Salary Managerial Grade 3 (£5,577-£6,225)

Applications are invited for these posts in this new Group 7 College which will be formed in September, 1976, by the amalgamation of

Chelsea College of Physical Education,

Eastbourne College of Education,

Seaford College of Education (Home Economics)

Further particulars and application forms obtainable on receipt of self addressed envelopes from the Chief Education Officer, P.O. Box 4, County Hall, St Anne's Crescent, Lewes, Sussex, BN7 1SG, to whom they should be returned not later than 15th December, 1975.

COUNTY OF AVON

Bath College of Higher Education

Sion Hill Place, Bath, BA1 5SF

Applications are invited for appointment as Head of the Department of Home Economics (at present Grade V). The post is vacant from January 1, 1976, but applications from candidates not available until May 1 or September 1 will be welcomed. The College offers full time courses for a B.Sc. (Home Economics) Degree and a B.Ed. Degree of Bath University. Salary will be according to the Pelham Scales of Salaries for the Teaching Staff of Colleges of Education, at present in the range £7,395 by £219 to £8,271. Further particulars may be obtained from the Principal at the above address, to whom applications should be submitted (no forms) with the names of three referees by December 17, 1975.

THE SELLY OAK COLLEGES
BIRMINGHAM
TUTOR FOR COLLEGE

The College of the Ascension is an Anglican foundation containing missionary candidates and a range of personnel from churches over the world, ...

... Please apply, with full curriculum vitae and names and addresses of three referees, to the Appointment and Training Secretary, USPG, 15 Tufton Street, London SW1P 3QQ, marking the envelope "Confidential—Home Staff".

Institutes of Technology

RENFREWSHIRE
PAISLEY COLLEGE
DEPARTMENT OF SOCIAL STUDIES
LECTURESHIP IN SOCIOLOGY

... application forms from Establishment Section, Paisley College of Technology, High Street, Paisley PA1 2BE, Renfrewshire (tel. 041-887 1241). Closing date, December 18, 1975.
Informal inquiries to Professor H. N. Sheldon at the same address.

General Vacancies

AN EDITOR

for the Methodist Church, Overseas Division (Methodist Missionary Society) will be required early in 1976. Until August 1976 the person appointed will work with the present Editor.

The Editor works with others concerned with Education for World Mission. A knowledge of Methodism and a sensitivity to new relationships with overseas churches are important, as well as essential editorial and writing skills.

Publications include NOW (monthly magazine), the Prayer Manual (annual), quarterly papers, leaflets, posters, duplicated material.

Salary will be negotiable.

Intending applicants should write for job description and details.

The Rev. Norman W. Taggart, The Methodist Church, Overseas Division (Methodist Missionary Society), 25 Marylebone Road, London NW1 5JR.

Administration

Professional Body—London Graduate

EDUCATION AND TRAINING

The Institute of Chartered Accountants in England and Wales invites applications from U.K. graduates for a new appointment as ASSISTANT SECRETARY to the Board of Accreditation of Colleges and Courses. The Board, which was set up in 1973 to deal with the recognition of degree and other academic and professional courses for exemption from certain entry and examination requirements of the Institute, now has need of additional help in connection with the

- appraisal of course submissions from universities, polytechnics and private tutorial establishments;
- monitoring of approved courses in accordance with the Board's general policy;
- development of contacts with educational institutions and, in particular, preparation for visits by the Board to establishments to discuss applications;
- preparation of reports and statistics on the subsequent examination performance of students;
- development of criteria for the recognition of additional categories of courses.

The person appointed will be required to assist the Secretary of the Board with the preparation of documents for meetings and the related correspondence and will be responsible (under the general supervision of the Secretary) for arrangements and documentation for a number of special liaison meetings undertaken by the Board and for visits to establishments.

Experience in academic administration is desirable and familiarity with recent developments in either the professional education of accountants or in higher education courses generally will be a considerable advantage

Starting salary will be not less than £4,000 p.a. There is a good pension scheme.

Application forms may be obtained from M. H. Luke,
P.O. Box 433, Chartered Accountants' Hall, Moorgate Place, London EC2R 6EQ. (Tel: 01-628 7060)

LONDON
THE POLYTECHNIC OF CENTRAL LONDON
SCHOOL OF THE ENVIRONMENT
SENIOR APPOINTMENT IN PLANNING

NEWCASTLE UPON TYNE
THE UNIVERSITY
ADMINISTRATIVE ASSISTANT IN THE REGISTRAR'S OFFICE

SHEFFIELD
THE UNIVERSITY
ASSISTANT REGISTRAR

WOLVERHAMPTON
THE POLYTECHNIC
FACULTY ADMINISTRATIVE ASSISTANT

BRISTOL
THE UNIVERSITY
SCHOOL FOR ADVANCED URBAN STUDIES
DEPUTY DIRECTOR

ENGLISH-SPEAKING UNION
DIRECTOR OF EDUCATION

EXPLORATION

... British Schools Exploring Society, 176, Temple Chambers, Temple Avenue, London, EC4Y 0EJ.

Colleges of Education

CHRIST CHURCH COLLEGE CANTERBURY

DEPUTY PRINCIPAL

Applications are invited from men and women for the post of DEPUTY PRINCIPAL to take effect at the beginning of the Summer Term, 1976, or as soon as possible after that date.

The salary will be according to the Pelham Scale for a Group 5 College of Education.

Further details are available from the Principal, to whom applications are to be sent not later than January 5, 1976.

PLYMOUTH
COLLEGE OF ST. MARK AND ST. JOHN
LECTURER IN HISTORY

Applications are invited from Honours graduates in History, preferably with some postgraduate experience, for appointment as LECTURER in HISTORY. Courses are provided for the Certificate in Education, B.Ed., B.Ed. (Hons.) and—subject to C.N.A.A. approval—Dip.H.E., B.A. and B.A. (Hons.).
Applicants must have teaching experience in Secondary or Primary Schools, and a lively interest in the role of History in the education of young people. A special interest in the History of Africa, India or China, though not essential, would be an advantage.
The appointment, which it is hoped to make for either May or September, will be at Lecturer II level on the Pelham Scale (£2,469 to £4,377) at the appropriate point of entry.
Further details may be obtained from the Principal, College of St. Mark and St. John, Derriford Road, Plymouth PL6 8BH, to whom letters of application should be sent not later than 5th December, 1975.

Announcements

THE DARTINGTON SOCIETY

NEW THEMES FOR EDUCATION

Annual Conference
5-9 April, 1976

This new conference series is designed to bring together contributors from the 'growing edge' of Education and its related disciplines in the Arts, Sciences and Humanities whose ideas can assist in the transformation of Educational thought and practice over the next decade or more.

Applications invited from those interested or directly engaged in education. Enrolment limited to 100. Information from the Secretary, The Dartington Society, Dartington Hall, Totnes, Devon.

ACADEMICS invited to devise and conduct special interest 6 day holiday itineraries in Britain next year. Historians, archaeologists, architectural and art historians etc. offered generous terms. Box 0650 T.H.E.S., The Times WC1X 8EZ.

For Sale and Wanted

'ECONOMIC CRISIS!'

A stimulating and realistic economics simulation game. Ideal for teaching economics, business, sociology, or for amusement at home. For 6-60 players, teenagers or adults. Price £4.40 including postage and packing.

Cash with order to: Simulation Games, Department HE1, 12 Kenilworth Avenue, Manchester M20 8NA.